JANUARY '58

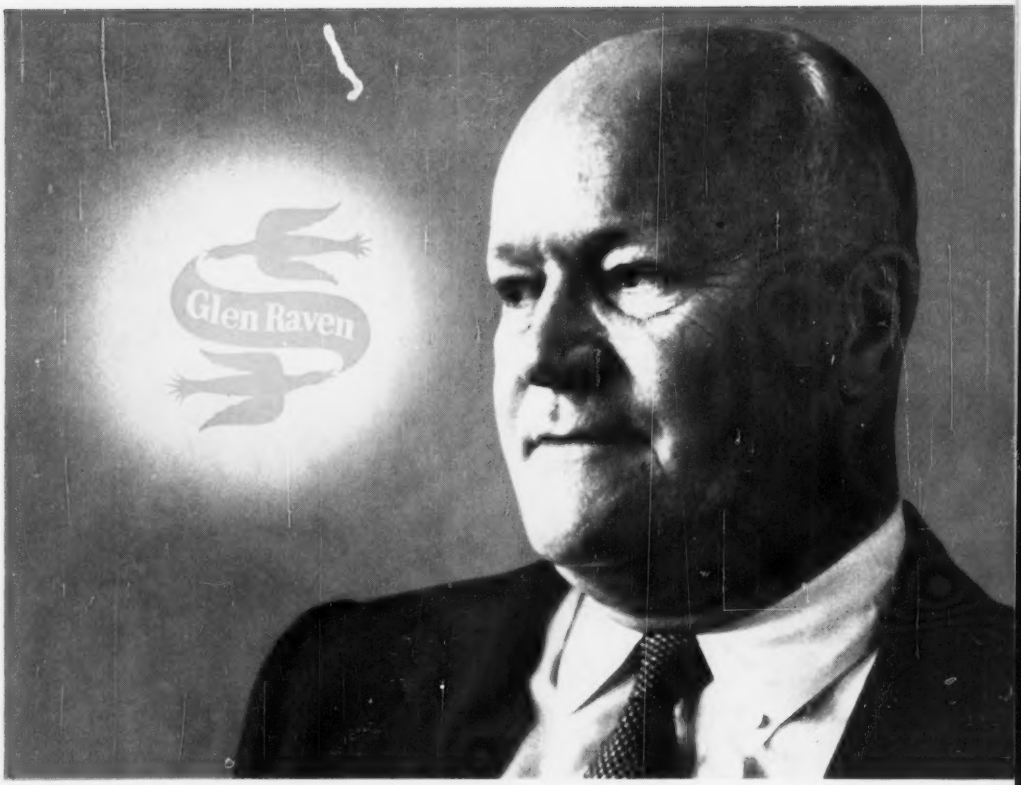
MODERN TEXTILES MAGAZINE

Specializing in Man-Made Fibers and Blends since 1925

FIBERS

FABRICS

FINISHES



ALLEN GANT of the Glen Raven Gants who believe in diversity and high quality—story page 29

THIS MONTH'S SPECIAL FEATURES

Urethane foams in textiles

Expanded vinyls in garments

Man-made fibers—big chemical user

Vacuum ends down collection systems

AND 12 MORE TIMELY ARTICLES AND EXCLUSIVE REPORTS

SONOCO tubes are "Job-Rated" for every textile need!

Sonoco "job-rated" paper tubes for the textile industry are the result of nearly 60 years' research and experience. Sonoco manufactures or can design a tube best suited to your particular need. This eliminates expensive guesswork and greatly reduces downtime.

Sonoco tubes are made from paper manufactured by Sonoco. Strict quality controls are maintained throughout the entire manufacturing and converting processes. This is one of several reasons why Sonoco does a better job of supplying tubes to meet your requirements. Special surface finishes and tube-end treatments are available to meet specific problems in winding, twisting, creeling and related operations.

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☆ Greater Strength ☆ More Resiliency

☆ Longer Life

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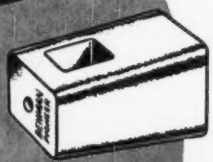
DROP BOX REVERSIBLE PICKER



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REGULAR PICKER

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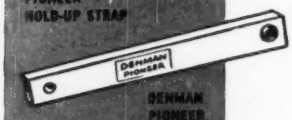

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SWEEPSTICK

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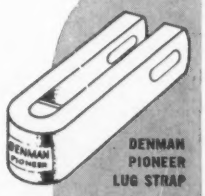
SPINDLE HUB BUMPER



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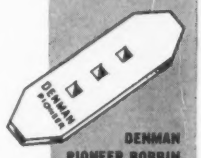
LUG STRAP



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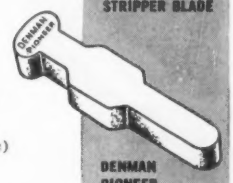
STRIPPER BLADE



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SAVES PICKER STICK WEAR AND TEAR!...
INCREASES LOOM EFFICIENCY!

Denman's Drop Box picker construction eliminates the weak spots in other pickers.

The insertion of the patented wedge provides a strong, smoothly tapered web, completely free from wrinkles. This exclusive feature also eliminates the resin-leak into the picker stick aperture. This leak often forms rough spots in other pickers which abrade and wear the picker stick.

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DENMAN TEXTILE RUBBER COMPANY

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IN '58 THE TREND
IS TO TEXTURIZED

*caprolan**

Crimped Caprolan in a fabric by Baldwin

Curled Caprolan in a new style by Collins & Aikman

New textures! New styling! New colors! And they're all made possible by the completely new character of texturized yarns of Caprolan, Allied Chemical's polyamide fiber which has *all* the advantages of nylon and more!

Whether Caprolan filament yarns are looped, coiled, crimped or curled by modern bulking processes, they offer new character to upholstery fabrics which may be dyed to colors of striking depth and brilliance and which have excellent durability, long appearance-life, superb crush-resistance, luxurious hand and—they're easy to clean!

For sources or additional information, call or write:

Fiber Sales and Service Allied Chemical *National Aniline Division*
261 Madison Avenue, New York City 16, N. Y.

*Registered Trademark—Allied Chemical's polyamide fiber

MODERN
TEXTILES MAGAZINE

January, 1958 Vol. 39, No. 1

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* * *

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Man-Made Fiber Producers Association ..... Empire State Bldg., New York
National Federation of Textiles, Inc. ..... 389 Fifth Ave., New York
American Association of Textile Chemists and Colorists ..... Lowell Techn. Inst., Lowell, Mass.
American Association for Textile Technoloy, Inc. ..... 100 W. 55th St., New York
Silk and Rayon Printers and Dyers Ass'n of America, Inc. ..... 1450 Broadway, New York
Synthetic Organic Chemical Manufacturers Association ..... 41 F. 42nd St., New York
Textile Distributors Institute, Inc. ..... 469 Seventh Ave., New York
American Rayon Institute ..... 350 Fifth Avenue, New York

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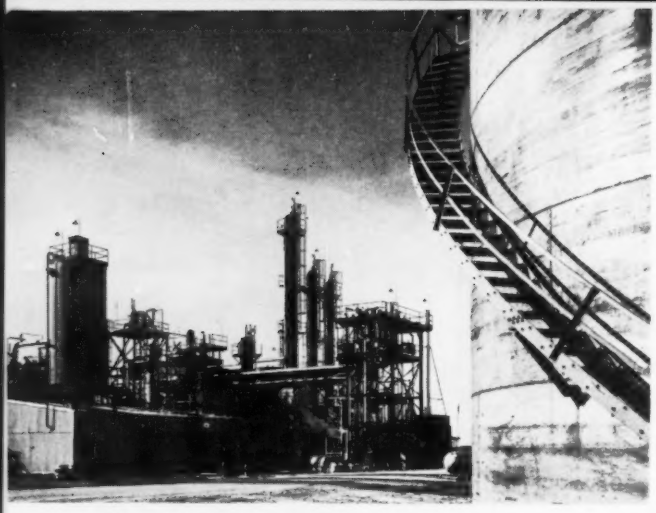


New Celanese Plant

Celanese Corp. of America has started construction of a new manufacturing unit at its Belvidere, N. J., plant to increase production of polyvinyl acetate emulsions, now manufactured at its Linden, N. J., plant. The Belvidere plant also turns out cellulose acetate and cellulose propionate molding powders and cellulose acetate extruded and cast film. The emulsions are used to manufacture, among other products, adhesives, non-woven fabrics, and in textile finishing and paper coating. Celanese also has begun tank car shipments from its new 150,000,000-pound-a-year acrylate ester plant at Pampa, Texas. The new Pampa plant makes Celanese a second major source of the chemical, which is used in textile, paper, leather and other industries. The process used by Celanese is based on basic discoveries by B. F. Goodrich Co.

Realistic Depreciation Urged

Depreciation rates on capital equipment are unrealistic and have imperiled the nation's textile industry, James M. Hunter, president of the American Textile Machinery Association, pointed out in a recent talk at Charlotte, N. C. He praised the efforts of the American Cotton Manufacturers Institute to overcome the depreciation problem on capital equipment and to obtain a better cash flow with which to modernize textile mills.

Manchester Machinery Show

The fifth Textile Recorder International Textile Machinery & Accessories Exhibition will be held at Belle Vue, Manchester, England, on October 15-25, 1958. To handle extra requests for exhibition space, new permanent halls are being built. Exhibits will include machinery, equipment and accessories for spinning; warp and filling preparation; weaving; bleaching; dyeing and finishing processes for natural and man-made fibers, as well as textile dyes and chemicals, lubricants, transmissions, and control gear.

Japanese Export Program Explained

World cotton textile markets are sufficiently large to absorb reasonable amounts of Japanese manufactured goods, according to Kichihei Hara, a director of the All-Japan Cotton Spinners' Association. He said Japanese textile manufacturers have no intention of destroying any segment of the American market through unfair competition. Hara pointed out Japan's huge imports of American raw materials as evidence of strong economic ties between the two countries. He stressed the fact that Japan is America's largest customer for raw cotton, and also imports substantial quantities of American foodstuffs and other products.

The word for rayon

HARTFORD

the symbol of dependability

Count on Hartford for a wide range of the finest rayon fiber staple. Count on Hartford for on-time service . . . a thoroughly dependable source of supply.

- Solution-dyed heavy denier crimped rayon staple KOLORBON†
- White heavy denier crimped rayon staple . . . . VISCALON 66†
- White heavy denier "smooth" rayon staple . . . VISCALON 44
- White fine denier regular rayon staple . . . . . VISCALON 22

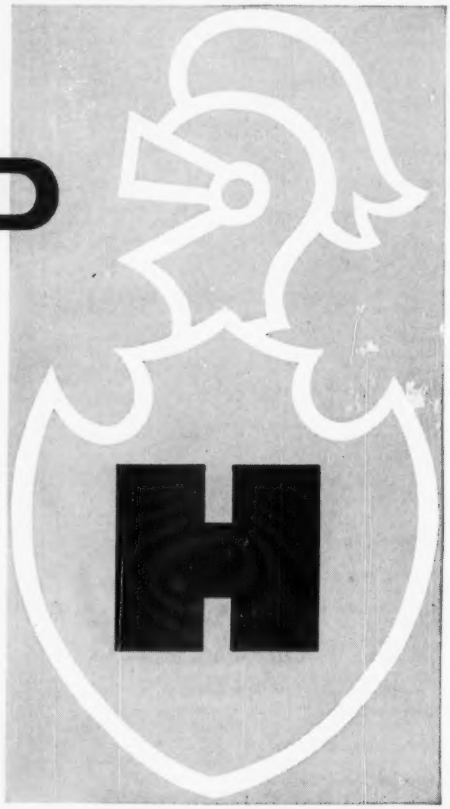
†Available in both 3" and 6" lengths

HARTFORD RAYON COMPANY

136 Madison Avenue, New York City

Southern Sales Office: Atlanta, Georgia

The country's leading producer of solution-dyed rayon staple



IRC

continuous process rayon helps give the '58 CHRYSLER

THE "FORWARD LOOK" ON THE INSIDE!

FABRIC BY CHATHAM MFG. CO.

Every item in the new Chrysler must contribute to the Forward Look... must be "years ahead" in styling, design, function.

That's why—again in 1958 as in 1957—the Chrysler Windsor features upholstery fabric made with IRC Continuous Process Rayon. No other yarn dyes so evenly, without a trace of streaking. "Seconds" are drastically reduced, mill efficiency rises to new heights.

So if you work with "critical" fabrics—and automotive upholstery is high on the list—specify Continuous Process Rayon.

I·R·C

Industrial Rayon Corporation
Cleveland, Ohio

Producers of Continuous Process Rayon Yarns and Tyron® Cord for Tires
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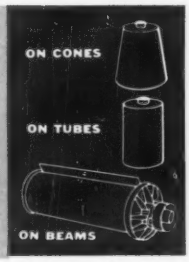
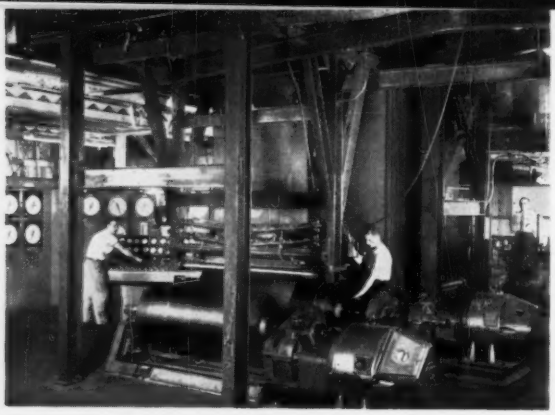


Use IRC Continuous Process Rayon... uniform mile after mile... perfect inch by inch... and it costs no more!



Firestone Invests in Nylon

Firestone Tire & Rubber Co. has installed at its Akron, Ohio, plant what is described as the world's largest nylon heat-treating unit designed to give nylon cord special characteristics for use in production of motor vehicle tires. The electronically controlled tensioning and gum-dipping machine contains 20 fans, 16 heaters and 14 drive motors. Over 90-feet tall, it impregnates nylon cord with a chemical solution, then stretches and tempers it in a bank of ovens.

New High Speed Loom

A new loom, reported to weave cloth 128 inches wide at a speed of 380 picks a minute is being manufactured in Belfast, Northern Ireland, by James Mackie & Son, Ltd. The "Tumack" loom, as it is called, inserts filling yarns by means of two spears each of which inserts two picks at a time. So far the new loom has been tested on jute cloths only in a Belfast and a Scottish mill. It is expected that it will soon be tried out on a commercial basis weaving cotton fabrics. It is reported that 80 of the new looms are being installed in West Germany.

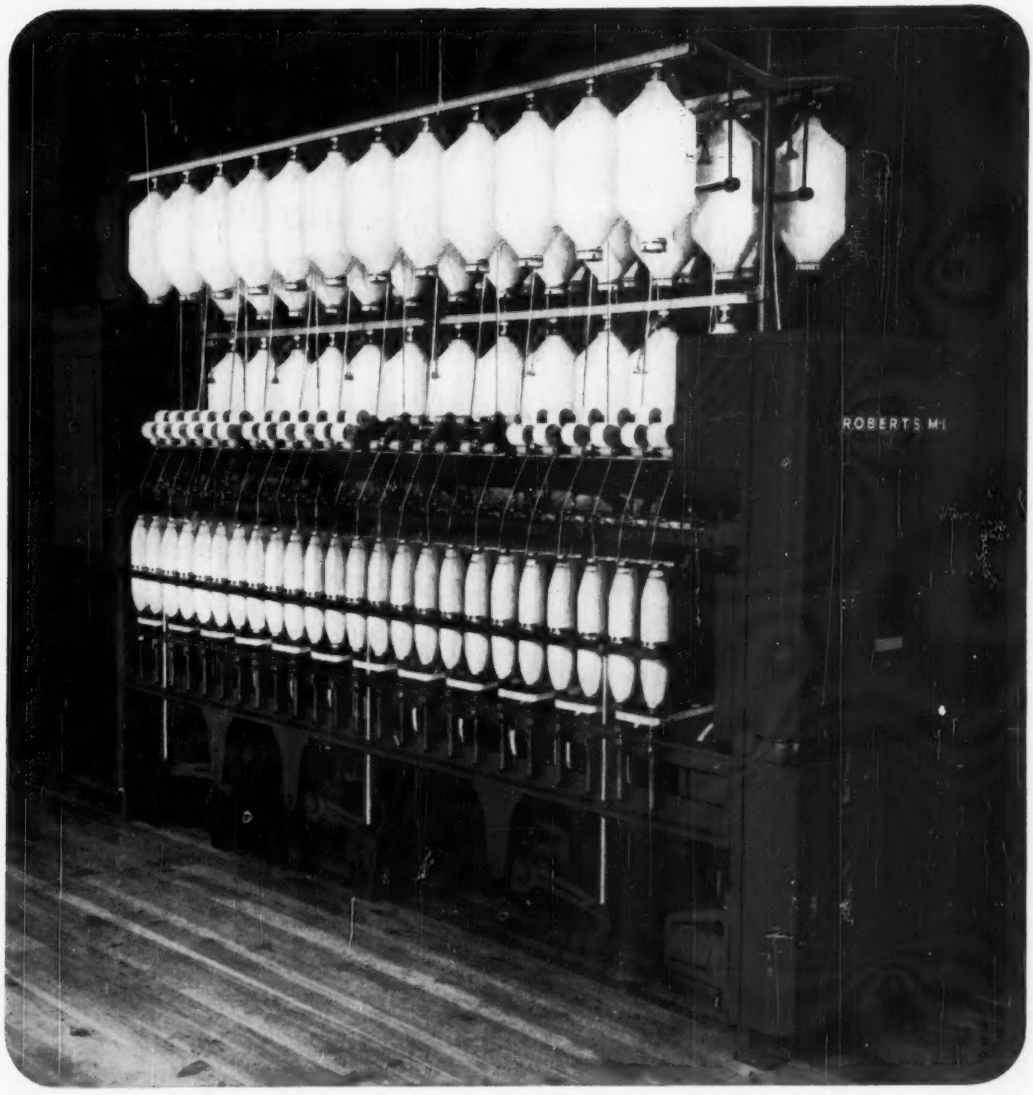
The spears carry the filling yarns from large supply packages located at each side of the loom. The spears are split horizontally, and are thus termed "duplex" so that each tongue of the spear can pass through its own shed. The spears are moved across the loom by a chain to which they are coupled. *For further information write the editors.*

Rayon Tire Cord Found Good

Results of a testing program of rayon cord tires were presented by J. J. Harrison, of Courtaulds (Canada) at a recent Akron, Ohio meeting sponsored by the American Rayon Institute Ltd.,Harrison reported the program showed superiority for rayon tire cord not only in longer tread life but quieter ride, increased carcass stability, greater heat resistance and increased mileage yield on subsequent retreading. He said rayon cord today has 40% more tensile strength than cords of two years ago, with a corresponding rise in fatigue resistance.

Another series of tests conducted for a group of rayon producers by an organization called Motor Vehicle Research showed that rayon tire cord can easily withstand 60-mile-per-hour impacts against a half-foot-high granite curbing. Before the impact tests, tire temperatures were raised to 200 degrees by prolonged driving. Rayon was pitted against nylon throughout the tests, the research firm reported.

While the front ends and wheels of the cars used often were badly damaged in the curb impact tests, MVR spokesmen said there was not a single trace of rayon cord damage. The tests were said to indicate "no superiority of nylon cord to resist damage compared to the same tires using rayon cord when impacting a curbing at speeds from 20 to 60 m.p.h."



ROBERTS SPINNING

ALL NEW—ALL BALL BEARING ROBERTS M-1 SPINNING FRAME

MODERN IN DESIGN

Into the rugged simplicity of the Roberts M-1 chassis has been built all the ball bearing features needed to provide the smooth operation and productivity for today's and tomorrow's production goals. Standard features include:

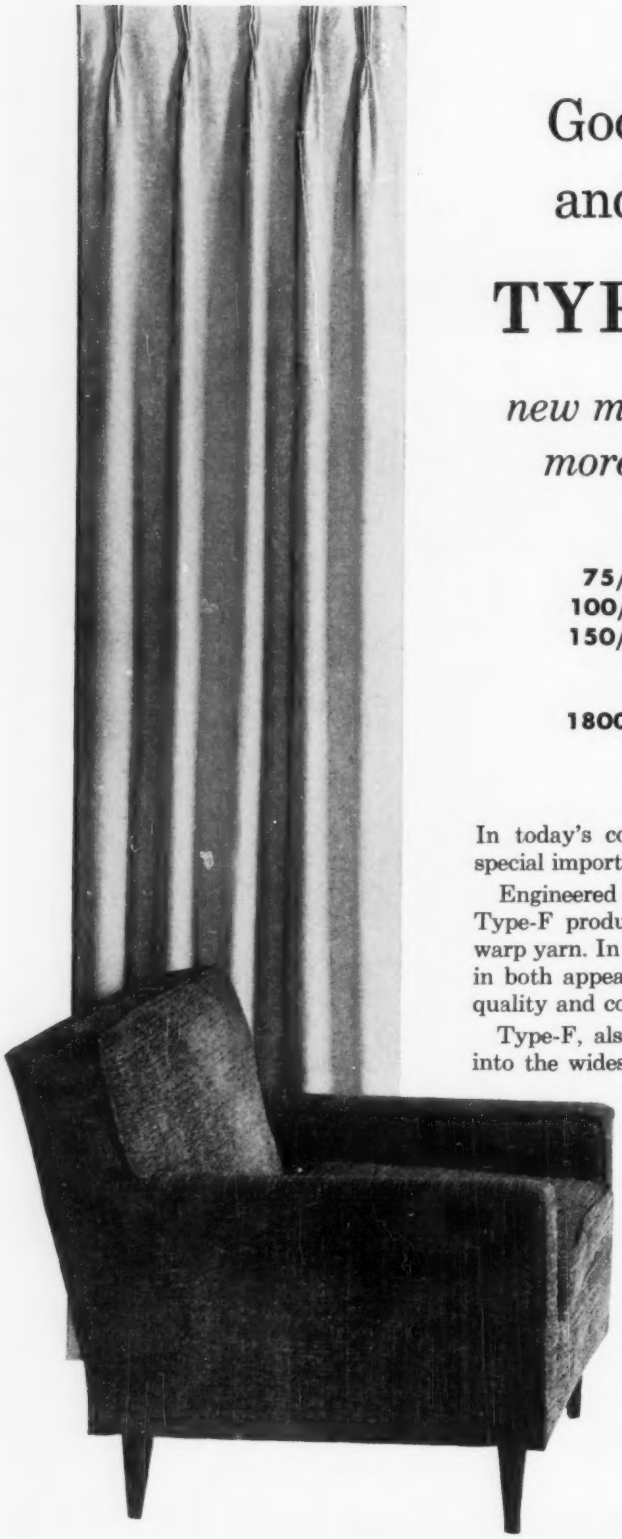
- FLEXIBILITY FOR COTTON AND SYNTHETICS
- BALL BEARING TOP ROLL SUSPENSION
- BALLOON CONTROL ARRANGEMENT
- BUILT-IN UnitVac SUCTION CLEANING
- EXTRA CAPACITY SPINDLES
- FULL BALL BEARING HEAD
- 45 DEGREE ROLL STANDS
- LATCH-TYPE BOBBIN HOLDER AEROCREEL
- STEEL BASE RAILS, ROLL BEAMS, RING RAILS
- ADJUSTABLE DRAFT CONSTANT, 500 to 3000
- TURNKEY ERECTION AND STARTUP

PROVEN IN PERFORMANCE

New Roberts Spinning has been running in the mill since February 1956 and has proven itself not only most economical in initial cost but low in maintenance. One large user with more than 200 frames in continuous production reports that the new Roberts Spinning runs with higher front roll speeds, better yarn quality and substantially lower ends down than the several thousand frames of other makes in operation in their mills.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA



Good news for drapery and upholstery fabrics

TYPE-F ACETATE

new modified filament yarn means more richness—greater appeal

FOR DRAPERIES

75/2Z/17
100/2Z/22
150/2Z/35
#35W TYPE-F BRIGHT
4 LB. CONES OR BEAMS

FOR UPHOLSTERY

1800/2/80 **#35W TYPE-F BRIGHT**
1-BU TUBES OR BEAMS

In today's competitive drapery market, Type-F acetate has special importance.

Engineered for increased surface coverage and greater bulk, Type-F produces a superior fabric with the same amount of warp yarn. In popular antique satins, for example, more richness in both appearance and hand is achieved and therefore better quality and consumer value.

Type-F, also engineered for upholstery fabrics, works easily into the widest range of constructions, assuring excellent color and fashion at volume price.

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Celanese®

TYPE-F ACETATE . . . A Celanese CONTEMPORARY FIBER

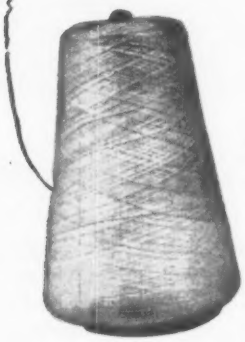
TOW...
will it make news in Dacron*/Wool Blends?

Wonderful and profitable things happened to suitings when spinners introduced yarns blended with synthetics — especially Dacron*. The next important advance may come through *modern* tow processing — on the Turbo Stapler. Here are reasons: On the Stapler, Tow can be given a staple diagram to match natural fibers, and can become an entirely *new* fiber.

Take Orlon* — on a Turbo Stapler it becomes fabulous High-Bulk Orlon that commands a premium price and has gained international recognition in less than three years.

The Turbo Stapler processes any man-made fiber delivered as tow. It heat-stretches, breaks and crimps the continuous, parallel fiber filaments to deliver an exceptionally even sliver. Denier can be altered — tensile strength increased — staple made long or short — hand can be silken-soft or wire-stiff. It is a compact, precision machine — easily controlled — quickly changed to process different fibers, without machine modification.

Modern tow processing may produce an entirely new suiting. We offer our facilities and complete cooperation to spinners who want to accept the challenge.



*Du Pont TM

TURBO
SINCE 1929

TURBO MACHINE COMPANY
LANSDALE, PA.

Makers of precision Heat and Steam Setting Machines, Crimpers and Tow Processing Equipment

Southern Sales Representatives: Parrott and Ballentine
501 So. Carolina National Bank Bldg., Greenville, S.C.

STRETCHING + BREAKING + CRIMPING + FINISHING = The TURBO STAPLER The TURBO FIBER SETTER

This fabric architect turns fiber facts into

Dave Hardin of Du Pont Fabric Development is showing Budd Levinson, President of Fabrex Associates, the prototype of a new fabric idea.

Dave and his associates are skilled artist-engineers. In their hands new blends, constructions and styles are developed to meet today's need for fabrics advanced in styling and engineering . . . fabrics that assure cutter and consumer satisfaction.

Sometimes they translate the properties of Du Pont fibers into a fabric designed to fill the requirements of a specific market. For instance: a hard-wearing, easy-to-care-for, low-cost work shirting. In other cases they experiment with blends and constructions in an effort to engineer entirely new fabrics. Fabrics which respond to the continuing demand for advanced

FROM RAW FIBERS TO RETAIL SALES . . .

designs for new business

coloration, styling and function. Every fabric design is carefully checked and tested for practical merit at the Chestnut Run Laboratory before it's introduced to the trade.

Du Pont Fabric Development creates these new fabric ideas to expand your business in fabrics containing man-made fibers and to build new and larger markets for the textile industry.

Du Pont believes it can increase the market for its fibers and thus benefit its customers by providing useful assistance to all levels of the textile industry. It's through your Du Pont sales representative that you, as a customer, have access to a range of technical and merchandising information unique in the textile industry.

Product and Process Notes from Du Pont

Slashed Loom Beams—zero-twist acetate warp yarns on loom beams are now available slashed and ready for weaving. Called Type 15, these beams require less processing in the mill and make possible better-quality yarns and fabrics. They are priced the same as unslashed, low-twist section beams.

Cross-Dyed Decorative Yarns—the use of cross-dyed nylon decorative yarns or trim permits more attractive styling of sweaters of "ORLON"* acrylic fiber. The sweater body can be dyed or left white while the decorative yarns are dyed to any shade. This new cross-dyeing method permits greater flexibility in choice of shades and helps avoid accumulation of dyed-yarn inventories. Either spun or filament nylon can be used.

No. 60 Thick and Thin Rayon—a new development containing short, uniformly repeated tapered flakes is now available in 450, 1,100 and 2,200 deniers. Du Pont No. 60 lends novel effects to flat and pile upholstery fabrics, to draperies, and is an excellent decorative yarn for circular knitwear. It is also well suited for hand-knitting yarns, shoe and millinery fabrics.

New Nylon Carpet Staple—Type 600, a new dull nylon staple for carpets, is now commercially available. When combined in varying percentages with Type 100 bright staple, Type 600 eliminates "shading," and retards apparent soiling with no sacrifice of color durability.

Technical Information Bulletins—contain detailed, practical information on Du Pont product and process developments. They cover fiber properties, mill processing, dyeing and finishing. Refer to your copies frequently; they can save you time and money. To be sure you have all the bulletins you need—check with your DuPont salesman or Technical Service representative.

*Du Pont's registered trademark for its acrylic fiber.

DU PONT
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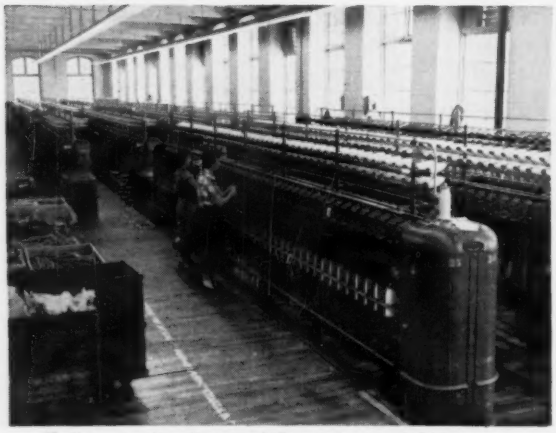
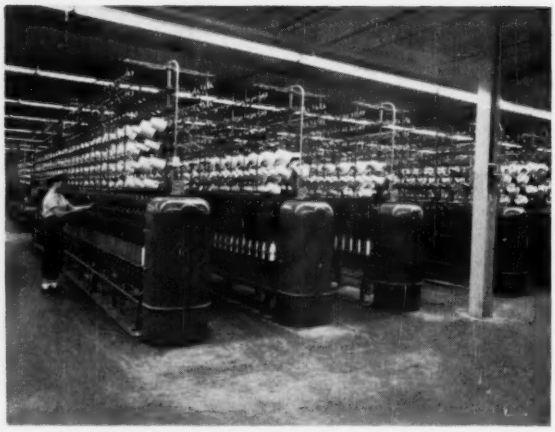
BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

DU PONT BUILDS PROFITS FOR YOU

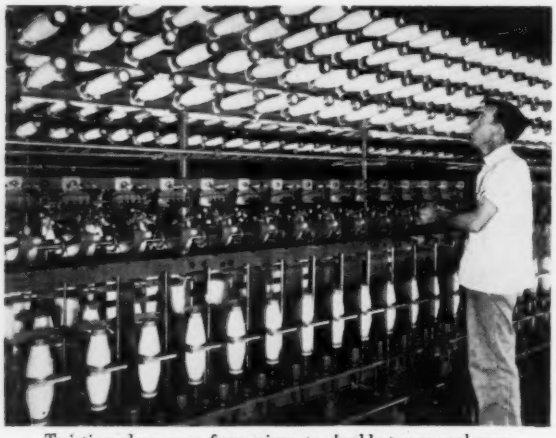
Leesona® Model 10 puts a wonderful twist on any yarn



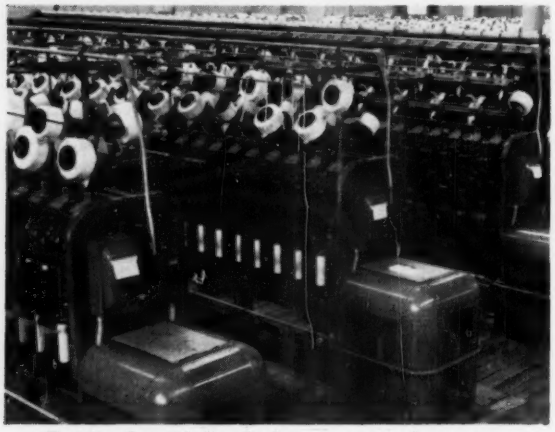
Twisting wool and worsted from spinning bobbins onto taper-top, take-up packages, as supply for winding machines.



Worsted, synthetic and metallic yarns from cones are plied together, twisted and taken up on large packages.



Twisting glass yarn from pirns to double-taper packages which will be used for filling and warping without re-winding.



Twisting Dacron* directly from zero-twist cheeses onto straight wind bobbins for further processing on high speed UNIRAIL® Uptwisters.

The world's best yarns — and all the others too — natural or synthetic — spun or filament can be plied and twisted best on a Leesona Model 10 Ring Twister.

With it you twist single end yarn or combine two to 16 ends, with a twist range of ½ to 55 turns. Automatic stop motion for each end in the ply permits tying knots in singles.

Here's the most versatile of twisting machines ready for any kind of package delivery — cones, cheeses, cakes, pirns, spools, bobbins or tubes. Produces straight wind, taper-top or double tapered take-up packages (filling or warp wind).

For more facts and figures write for Leesona Model 10 Ring Twister Bulletin 10-A.

*Dacron is a DuPont registered trademark.

UNIVERSAL WINDING COMPANY

P. O. BOX 1605, PROVIDENCE 1, R. I.

Sales Offices: Boston • Philadelphia • Charlotte • Atlanta • Los Angeles
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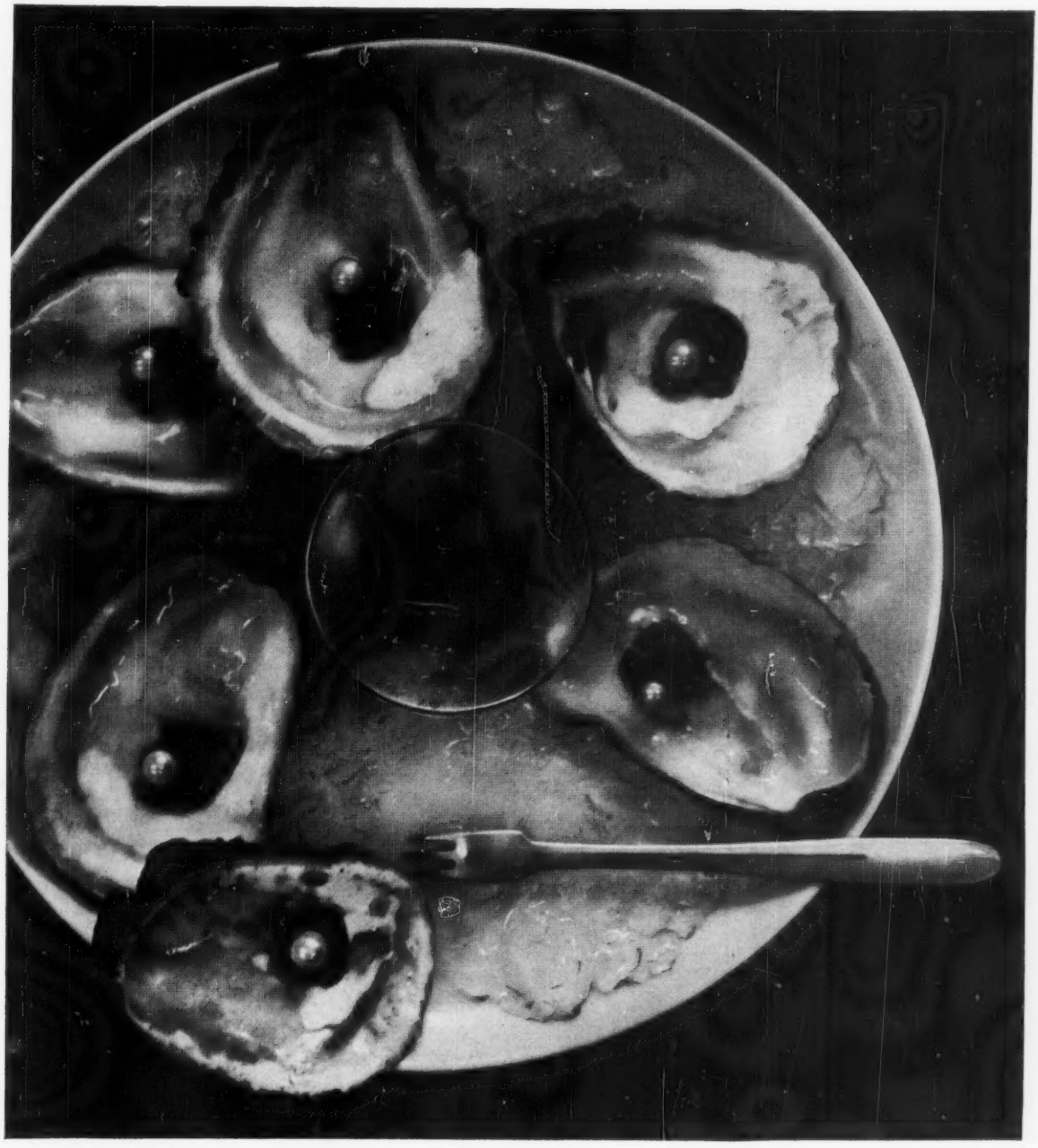
Agents in every principal textile center throughout the world

23.7.6



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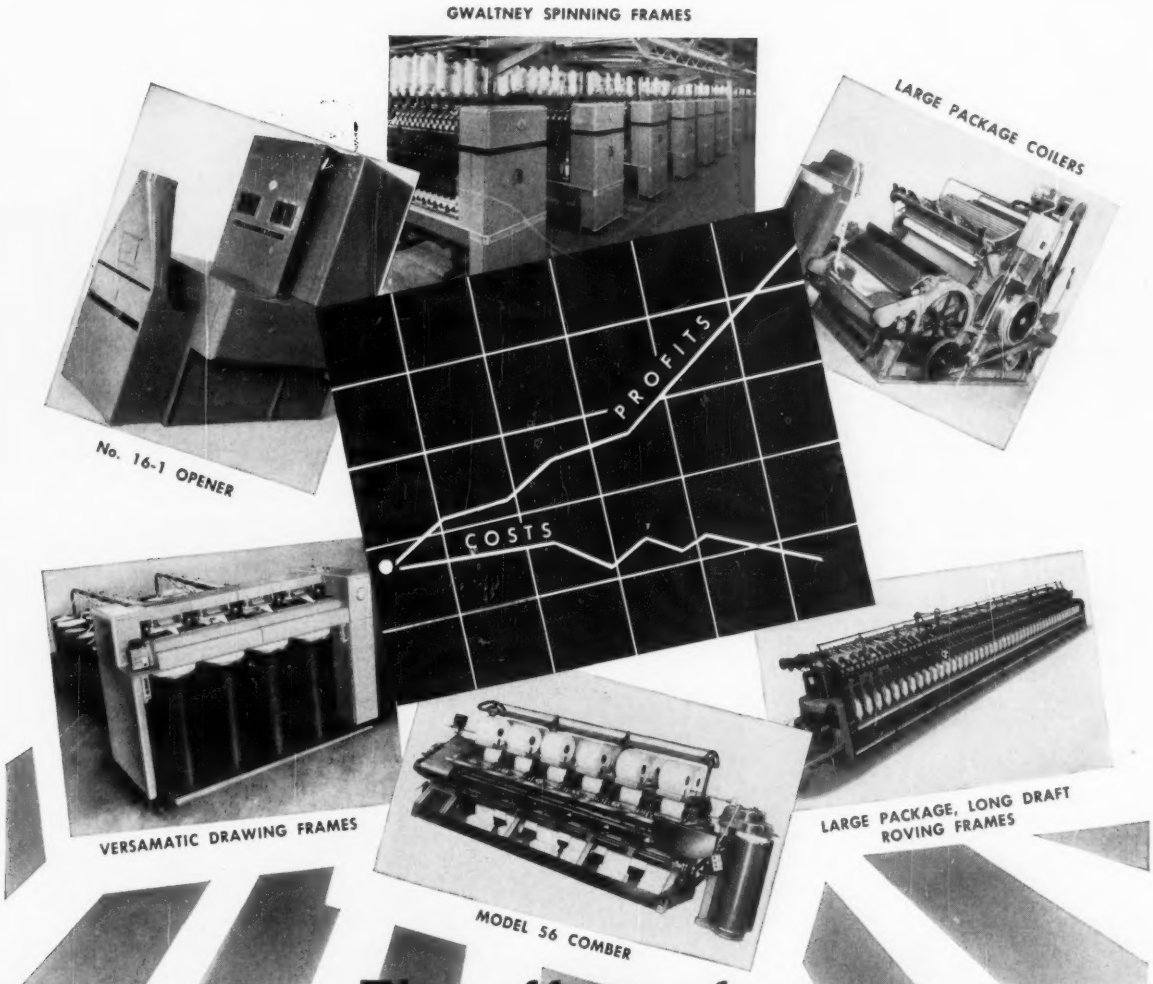

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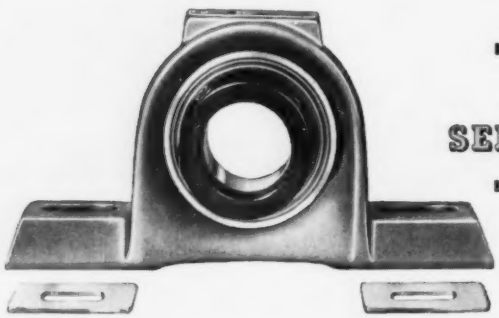

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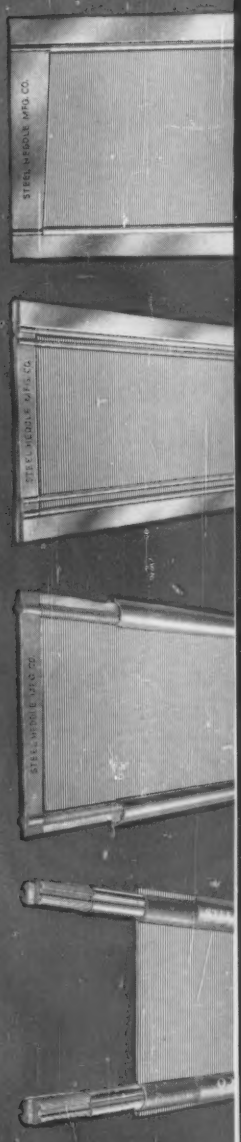

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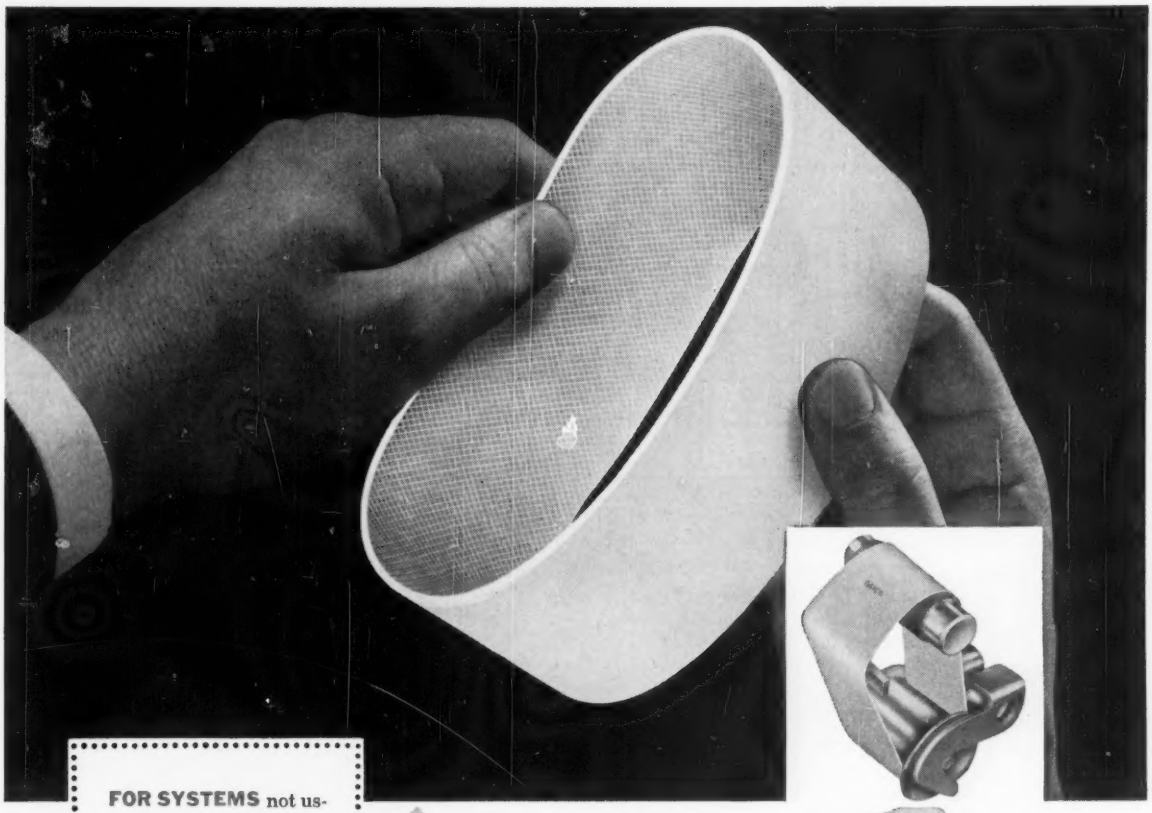

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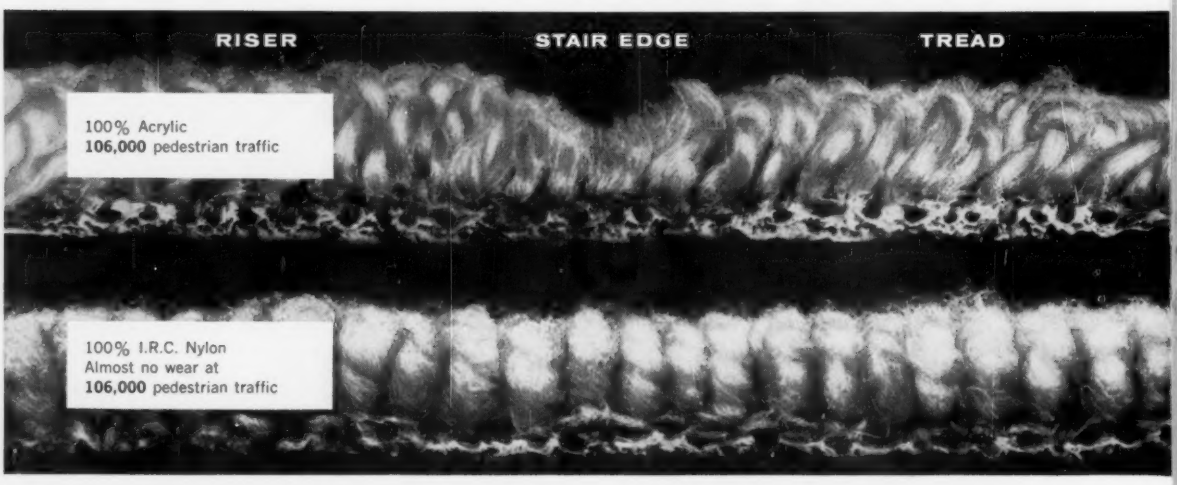

NYLON COMPARED WITH RAYON AND WOOL

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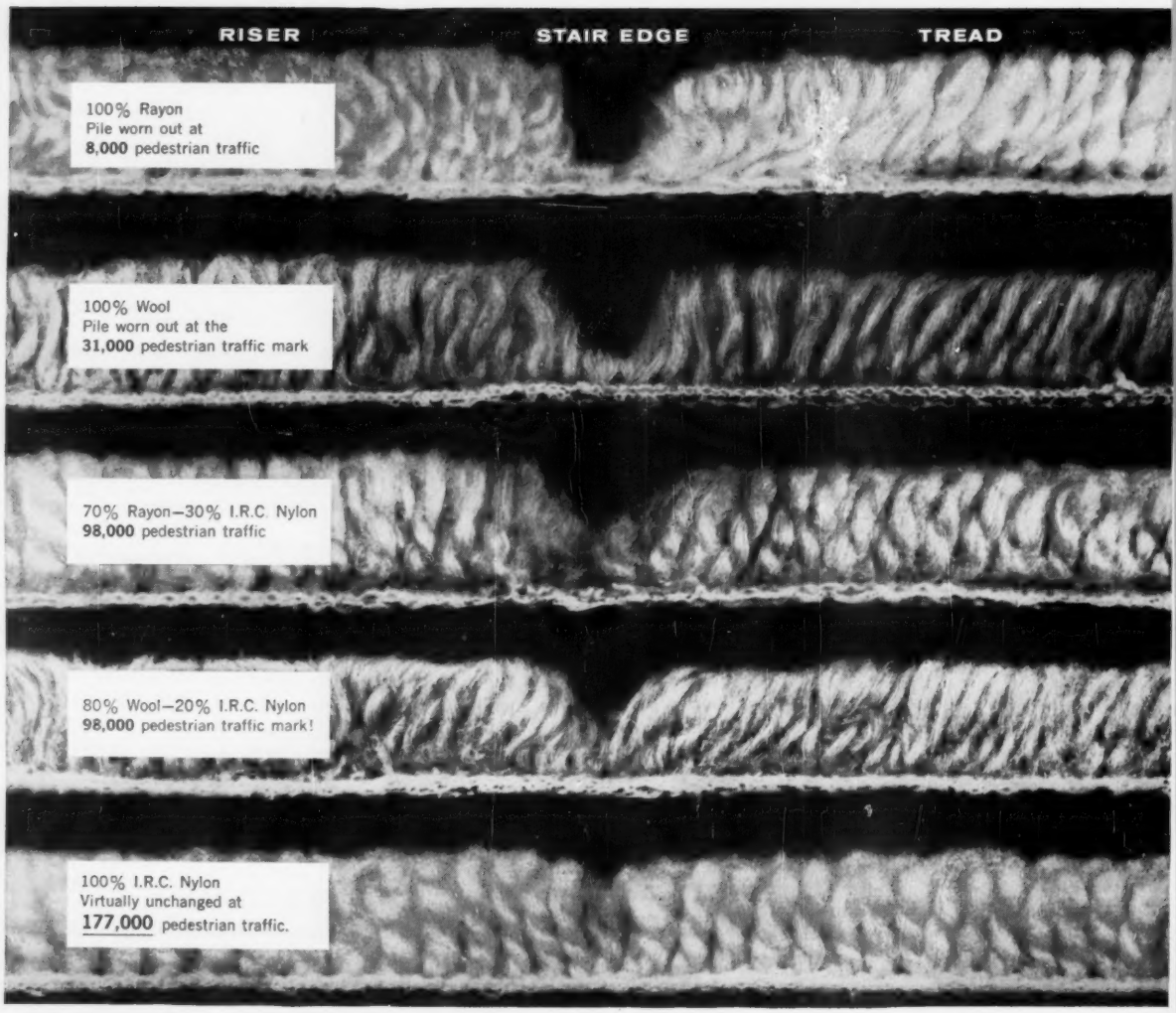

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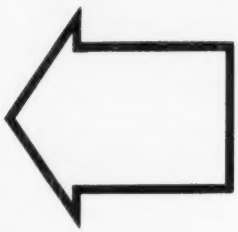

WEAR—Nylon outwears every other carpeting fiber known. In these tests identical, unpadded strips of carpeting were laid on bare, rough steps in an industrial plant. The strips shown in the unretouched photographs were rotated regularly. 100% rayon was removed after stair edge wore out—at only the 8000 pedestrian mark! The 100% wool was stopped at the 31,000 pedestrian mark. The test for the 70% rayon/30% nylon and 80% wool/20% nylon were stopped at 98,000 and for 100% nylon at 177,000. In the test of acrylic fiber with nylon, the photographs tell the story!

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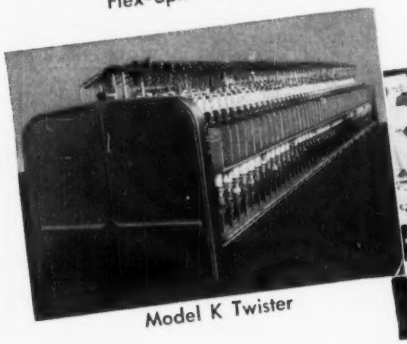
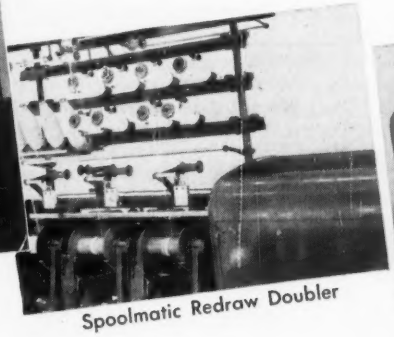


Model K Twister



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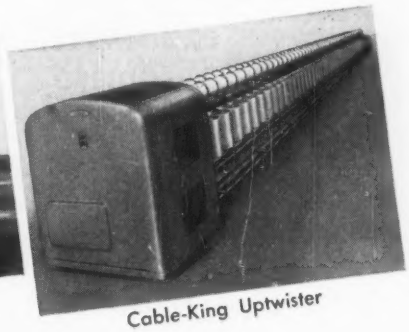

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January '58

MODERN TEXTILES
Magazine

Publisher's Viewpoint

A Brighter Outlook for 1958?

As textile manufacturers look back over the past year, they do not have too much to be cheerful about. Business in all areas of fabric manufacturing—man-made fibers, cotton and wool—has been far from satisfactory. Yet as we go about the industry talking with a great many people who are instrumental in making and marketing fabrics, we have become strongly aware of a general feeling of optimism about the future.

The opinion is prevalent that we have reached the bottom of the downward cycle and that improvement is bound to occur soon. "The current downward movement in production and mill activity," W. Ray Bell of the Association of Cotton Textile Merchants of New York pointed out recently, "started in mid-summer of 1956 and has continued for a total period of 16 months through last October. As prior downward adjustments have run from 12 to 16 months, "the timetable of past experience would indicate," he said, "that an upturn is overdue."

In his annual survey, Mr. Bell noted that curtailment in the cotton industry has been aided by elimination of 673,000 spindles in 1956 and 392,000 more in the first nine months of 1957. This reduction, amounting to 5% of existing spindleage, will be helpful in furthering the trend to produce to meet demand and "not for speculation," he noted.

Confidence in the future was also strongly voiced early last month by James E. Robison, president of fast-moving, fast-growing Indian Head Mills. He predicted a huge demand for textile products in the next five years.

Man-Made Fibers May Lead Recovery

Similar predictions of better business came from the man-made fibers end of textiles not long ago. W. H. Shaw, manager of Du Pont's textile fiber's business economics section, saw a modest upturn late in 1957 extending into 1958. If past patterns of cyclical recovery can be depended upon, he said, the rise "will continue fairly slowly but fairly steadily until the spring or early summer of 1958." This assumes, he added, "that it will not be choked off by a general business recession." Mr. Shaw made the point that a recovery in textiles may be marked by the newer man-made fibers making effective use of the capacity increases scheduled for 1958 and "thus achieve greater gains than either the natural fibers or the older man-made." He said that these gains in a number of markets are likely to be large enough to mean actual losses for cotton, wool, acetate and rayon.

Increases in Man-Made Fiber Capacity

Some indication of what these capacity gains in the newer non-cellulosic fibers will be is given in the most recent issue of the Textile Organon, which reports that annual capacity is now 727 million pounds. Anticipated increases through November, 1959 are expected to bring the total to 895 million pounds, an impressive 42% jump.

Rayon Shows New Vitality

That the oldest of the man-made fibers has great current achievements to its credit and a tremendous potential for the future was dramatically illustrated in November at a colorful fashion show staged in New York City by the American Rayon Institute. The big audience of mill and garment people were impressed by the wide range of smart uses of rayon in apparel and home furnishings paraded before them. The Institute took the occasion to point out that rayon accounts for 60% of man-made fiber consumption in woven apparel and home furnishings. It also reminded us that the textile industry is currently turning out annually 1½ billion yards of fabric containing rayon.

A New Chapter for Man-Made Fibers

For that vast section of textiles primarily devoted to making and marketing man-made fiber fabrics, a new era will formally open this month. On Jan. 29, a special meeting of the membership of the American Cotton Manufacturers Institute will be held in Charlotte, N. C. to ratify by-law changes required by the merger of the ACMI with the National Federation of Textiles. Thus will close a chapter in the history of American Textiles during which man-made fiber interests for many tumultous decades had their own trade group to speak for their own distinctive interests. It is the sincere and heartfelt hope of this publication, devoted as it is to man-made fibers and their uses, that the new organization will do even more for man-made fibers than even the distinguished achievements of the former National Federation of Textiles. If the new trade group is sincere and zealous in defending the interests of man-made fibers as was the old NFT, this publication pledges it our strongest support.

A. L. McCullough

OUTLOOK IN TEXTILE MARKETING

When will that upturn come?

By the Editors

As the new year opens for textiles, the truth must be recorded that business is not good. The upturn in demand for fabrics, which was hoped for by the end of 1956 has not appeared. Consequently, virtually all areas in textiles are hurting right now. Particularly acute is the pain felt by cotton manufacturers. Sales have been slow for months, and prices have been unsatisfactory.

Good Medicine If You Take Enough—Recent curtailments of production which are general in mills producing such cotton staples as printcloths, denims, and a wide range of twills are looked upon with hopefulness as a means of bringing supply in closer correspondence with demand. Nevertheless, some veterans of the big volume cotton manufacturing industry doubt whether curtailment will make a major contribution to the industry's problem of licking bad business. These skeptics do not think the industry, geared as it is to producing tremendous yardages, can curtail production except in a minor way. One seasoned southern mill operator put it this way: "Years ago when business was bad, we shut down. Today with our high fixed costs, our modern 'social-minded' anxiety to keep our workers receiving regular pay checks and our less idealistic fears that we may lose them to other industries, makes "curtailment" not so easy."

Present Slump Has New Pattern—The fact that "overproduction" rather than "underconsumption" is the key to the textile industry's present troubles is borne out by a recent study of the National Industrial Conference Board. Late last year textile manufacturers' stocks were about 10% higher than normal, the study shows. Apparel sales, the study also reveals, are in line with the usual relationship to population and income levels. Significant light on the present textile decline in relation to past slumps is shed by the report. The current decline has only been *half as great* as the three previous cycles, but has lasted *twice as long*. By last September the present decline has run for 22 months compared with an average of ten months for the three previous declines.

Those Unpredictable Retailers—Meanwhile, as fabric sales dragged, retail sales of apparel have been rising while store inventories dropped. Last fall, stock-to-sales ratio of apparel stores fell to 2.7, the lowest since 1952. Does this mean that an unavoidable resumption of stronger buying by stores will soon develop? Many textile economists have been expecting such a favorable turn. And they have been wishfully half-predicting that such a resumption of buying will be the necessary push to send the textile market moving up the sales spiral once more. However, it may be that the stores will wrongheadedly and shortsightedly stick to their present policy of painfully thin stocks.

Predicting Is A Foolhardy Trade—The truth of the matter is that forecasting what is going to happen in the textile market has become even more risky and thankless than it has ever been. The added element that makes even the most timid and carefully hedged predictions, a pointless task is the current slump that afflicts all business. The fact that we are sliding into a downturn is now officially acknowledged by Government economists. Unemployment is increasing; steel output is off; appliances glut the warehouses; auto sales are not satisfactory. However, most economists, including some of the most respected in private industry and finance, expect a decisive upturn after the middle of this year.

But Keep Your Eye on Textiles—It may be that the improvement in textiles, long awaited and by all signs sure to come, will have to await a turn for the better in overall business conditions. Or, indeed, the upward swing in general business may be heralded and paced by a heartening upturn in demand for textile products—and this improvement may come sooner than many presently discouraged textile millmen and fabric marketers expect. In short, watch textiles.

Two mills turning out a diversity of woven cloths, a tricot plant producing a wide range of high quality fabrics, and a women's hosiery operation, all in first class shape and humming with orders, prove that for the Gants of Glen Raven Mills

VARIETY is the SPICE of SUCCESS

Allen E. Gant

By Jerome Campbell
EDITOR, MODERN TEXTILES MAGAZINE

THE GANTS of Glen Raven, North Carolina, are justly proud of the sizable textile business that three generations of their family have built by hard work, by alertness to opportunity and by unstinting investment of earnings. Right now a fourth generation of Gants is appearing quietly on the scene, setting out to learn the textile business by working at it.

The business these younger Gants are entering is far different from the cotton mill that their great grandfather, Jesse Gant, started down in Alamance County in North Carolina in 1841. Today the Gants have a group of mills in North Carolina that can muster some 25,000 spindles and 676 looms along with 18 high speed tricot machines, 76 full-fashioned and 310 circular hosiery knitters. Their plants give employment to 2,000 of their fellow North Carolinians, and sales this year of woven goods, hosiery and tricot cloth will reach $25 million.

Although the Gant textile story began with great grandfather Jesse, it did not really become related to the present until his son, John Quentin Gant, a young fellow of 18, returned from Appomatox and the Army of Northern Virginia to find that his father's manufacturing interests had been wiped out in the impoverishment caused by the lost war. At that moment, there seemed nothing else to do but farm the land which was all the Gants had left. But after a year of digging and delving, young Gant walked out of the field one day vowing he had "plowed his last furrow."

After working a while in the local cotton mill for the startling salary of $150 a year, he struck out for himself with a general store in the town that is now Burlington. From his profits, he saved enough to invest in a textile mill along with several partners. In 1881, the partners built a mill and equipped it with new machinery for producing the colored stripes and ginghams then strongly in demand.

In 1900, John Gant, impressed by the urgent need to expand to meet the growing market for fabrics, branched out on his own to build another plant which he named Glen Raven Cotton Mills. From that time on growth was continuous. John Gant worked tirelessly to keep his mill running at the highest level of efficiency, and he set a high standard for the quality of its cloth. In time, his arduous labors were shared by his sons. He had eight of them, and one by one, as they finished school and came of working age, they found ways to make themselves useful in the mill.

The "boss man," as they still call him in Glen Raven, continued to work hard to guide the growth of the mill for many decades of active business life as his sons grew older and gradually assumed more and more responsibility. The stamp that John Quentin Gant placed on the company continues indelible to this day. So strong was his devotion to the family business, that in his last years, when he was no longer as energetic as he had once been, Gant kept a cot in his office where he could rest from time to time during the long working days he still ob-

FOUNDING FATHER—At Glen Raven they revere the memory of the "boss man", John Quentin Gant, who established the company and guided its growth until his death in 1930.

served. It was while napping on this couch one day in 1930 that he passed away, a millman "on the job" until the very last.

Under the leadership of his sons, Roger and Allen, both stalwart chips off the old block, Glen Raven, since the elder Gant's death, has continued along the path laid down by him. "We try," says Allen Gant, who is president today, "to conduct our business on a high level. We believe in making a decent product and then trying hard to sell it for a decent price."

Roger and Allen Gant have an almost religious dedication to their business and a truly religious feeling that they have been entrusted with an obligation by their father and grandfather to keep Glen Raven strong and prosperous so that the welfare of its 2,000 employees will be safeguarded. They have dedicated their lives to building what Allen says is their guiding standard: "an honest, straight-forward, energetically pursued business."

The highest moral standards, however, and the best intentions, admirable as they may be, are not enough to keep a business healthy in a rough, tough competitive world. This is a hard truth that Roger and Allen Gant grasped early in their careers as managers of the fortunes of Glen Raven Mills. Thus they have combined for many years their sense of dedication to the business as a community trust with the rare practical sense to keep Glen Raven modern in its equipment and modern in its merchandising practices.

Part of this modernism has been the willingness to plunge ahead into new fields in search of the advantages of diversification. Thus as long ago as 1936, the Gants went into the manufacture of women's fine hosiery. Without any experience in the hosiery trade, they started out with 12 Einsiedel-Reiner 24 section machines. Over the years, they have done so well that today they have a beautifully maintained full-fashioned plant at Altamahaw near Glen Raven. There the 76 modern, smoothly running knitters are about equally divided between U. S. Textile Machine Works "Reading" machines and Lieberknecht machines. In Newland in the western part of the state there is another plant whose 310 circular machines are devoted entirely to the popular seam-free nylons.

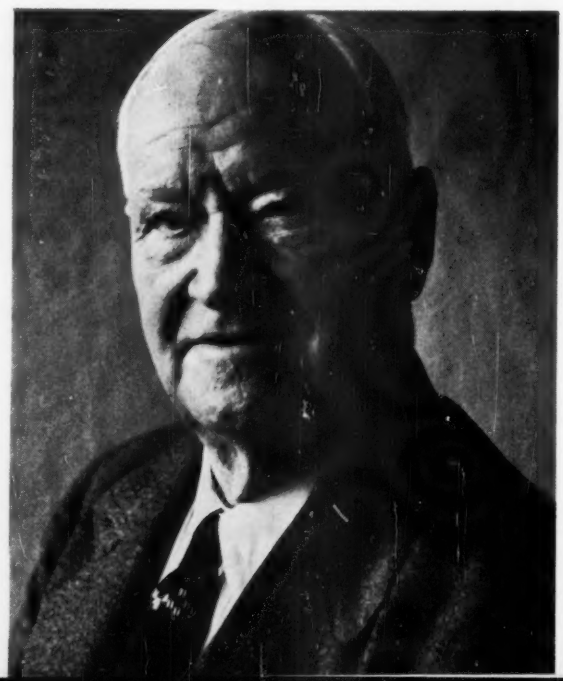
It is characteristic of the Gants that, even as newcomers to the hosiery business back in 1937, they studied hosiery manufacturing with open minds and sought faster ways of knitting stockings. They noticed with considerable dismay, for example, that in knitting stocking blanks it was necessary to stop the machines to turn the welts. On a 24 section machine it took two workers 12 minutes to turn all the welts. "Why not an automatic welt turner?" the Gants asked. The old timers in knitting told them that there was no such device. "You stop the machine to turn the welts," they were told. "That's the way it was always done."

But the Gants made inquiries and they soon learned that a welt turner had recently been developed in Germany and would soon be available from Karl Lieberknecht in the United States. The Gants installed these automatic devices on all their machines and thus for five years were able, as Allen Gant now recalls, to remain ahead of "the general run of our competition."

In 1950, the Gants further diversified by going into tricot manufacture. In this increasingly competitive and low profit area of textiles they have done well by applying their basic principle of producing the highest quality goods. Today Glen Raven's battery of high speed Reiner and Mayer machines pound out virtually flawless warp knit fabrics—an increasing yardage of which is interestingly patterned and figured goods in contrast with the low-profit plain fabrics used in the underwear trade.

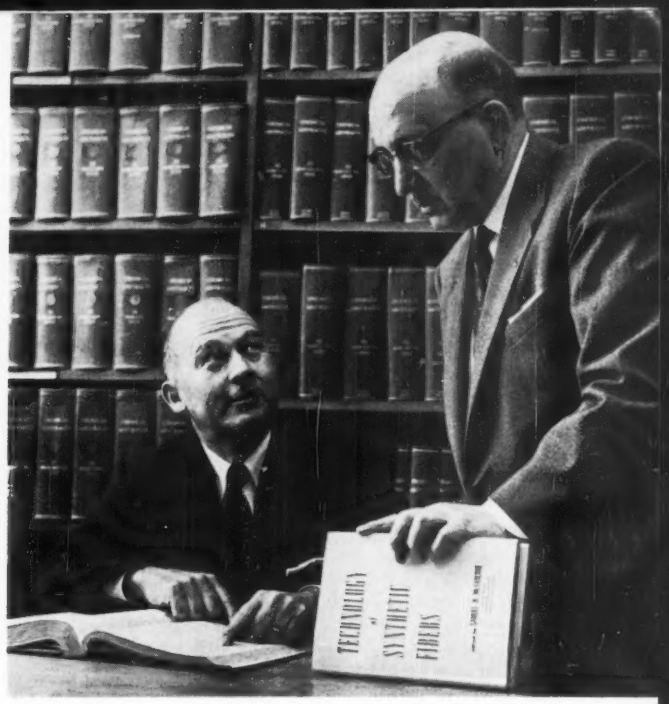
In 1939, the Gants expanded further by acquiring a mill at Kinston, N. C., which they equipped as a spinning plant. In 1947, they took another step forward by building a new mill for weaving filament fabrics in Burnsville, N. C. A thoroughly modern plant, as neat as a pin and as clean as a whistle, the Burnsville mill has been the special pride of Roger Gant, or "Major" as he is known throughout

(Continued on Page 45)



HARD WORK HIS MEAT AND DRINK—Roger Gant, who with his brother Allen, bosses the Glen Raven operation, has built an impressive reputation as a tireless worker in his long lifetime with the company.

By S. B. McFarlane (left) & A. F. Caprio



Man-Made fiber textiles—

a big and growing market for chemicals

IT HAS OFTEN been said that textiles are the chemical industry's best friend. Indeed the lines distinguishing the textile industry from the chemical industry, as far as production and consumption of basic chemicals are concerned, are being slowly obliterated as the two industries become more and more dependent on each other. So revolutionary has this interrelationship become, that this subject continues periodically to engage the interest of chemists, engineers and economists both here and abroad. Perhaps it is because the textile industry is one of the oldest industries, having for its customers the entire population of the world. Today it is the largest employer of labor of all industries and has provided countless jobs for chemists, engineers and physicists. It is second only to the food industry in volume of business and now account for 25% of all industrial chemical sales. Expressed in terms of dollars with respect to the chemical industry, it has been estimated that a 25% curtailment of textile mill operations could mean a loss of a 200 million dollar market for chemicals.

In the Southern Atlantic states the textile industry is the largest consumer of industrial chemicals. These chemicals are used not only in the manufacture of the fiber polymer but in every step of the textile processing such as cleaning, mercerizing, bleaching, dyeing,

TABLE I
SOME DATA ON U. S. PRODUCTION 1950-1956 OF MAN-MADE FIBERS
(Millions of Pounds)

	CELLULOSIC FIBERS			NON-CELLULOSIC FIBERS			
Year	Rayon[a]	Acetate[b]	Total Rayon and Acetate	Organic Fibers[c]	Textile Glass Fibers	Total Non-Cellulosic	Grand Total Man-Made Fibers
1950	815.8	443.6	1259.4	122.4	23.5	145.9	1405.3
1951	865.4	428.8	1294.2	170.6	34.5	205.1	1499.3
1952	806.3	329.5	1135.8	210.7	45.0	255.7	1391.5
1953	876.7	320.2[e]	1196.9	246.7	50.3	297.0	1493.9
1954	820.4	265.3[e]	1085.7	284.6	59.2	343.8	1429.5
1955	972.8	287.8[e]	1260.7	379.3	75.8	455.1	1715.8
1956	897.8	250.1[e]	1147.9	399.9	96.9	496.8[d]	1644.7

[a] In the above table rayon comprises viscose and cuprammonium.
[b] Acetate comprises secondary acetate, triacetate, and saponified acetate.
[c] These cover acrylic, nylon, polyesters, polyethylene, polyvinyl acetate, polystyrene, polyvinylidene chloride, protein, and miscellaneous fibers other than glass.
[d] As to capacity forecasts by *Textile Organon*, expansion in the present 514 million pounds capacity for non-cellulosic fibers should bring capacity to 693 million by March 1958, and to 763 million pounds by the end of 1958. These capacities may be subdivided into yarns, which now stands at 320 million pounds per year and is expected to grow to 459 million by the end of 1958, and into staple and tow, which now equals 194 million pounds, and is expected to reach 304 million pounds. Most of the latter gain will be in acrylic fibers. The value of 500 million pounds of synthetics is estimated at $700 million.
[e] To these figures must be added the estimated sales of cigarette tow of 6, 12, 24 and 42 million pounds for 1953, 1954, 1955 and 1956 respectively.

TABLE II
UNITED STATES CONSUMPTION TRENDS FOR NON-CELLULOSIC (INCLUDING GLASS) FIBERS[10]
(Millions of Pounds)

		1960		1965
Textile Glass Fiber		135		175
Non-Cellulosic Fiber				
Polyamide	340		450	
Acrylic	170		250	
Polyester	75		150	
Vinyl & Polyethylene	40		55	
Protein	10		20	
Total Non-Cellulosic		635		925
Synthetic Fibers Total		770		1100

printing, and finishing. It was reported early this year[1] that the textile industry consumed 2.3 billion dollars worth of chemicals, 85% of which were for textiles, 10% for dyes, finishes, and detergents and 5% for other purposes. A considerable amount of chemical consumption in the processing of textiles falls in the field of dyes and dyestuffs.[2,3] Thus, in 1950, 202 million pounds of dyestuffs with a value of 204 million dollars were consumed. It is predicted that in 1962, 260 million pounds of dyestuffs with a value of 260 million dollars will be used and in 1975 the estimate will rise to 400 million pounds valued at 400 million dollars.[4]

It becomes of interest, therefore, to examine analytically the recent growth of the textile industry, since 1950 up to the present date, and its effect on the chemical industry.

Textiles

Table I gives data as reported by *Textile Organon*,[5] Statistical Bulletin of the Textile Economics Bureau, Inc., on United States production of man-made fibers in millions of pounds.

According to a report of the Textile Economics Bureau early this year, the United States man-made fiber industry currently can manufacture 2,144 mil-

(Continued on Page 37)

TABLE III
U. S. CAPACITY FOR NON-CELLULOSIC FIBERS[6]

Groups	Estimated '57 Capacity (Million Pounds)	Estimated Additional Capacity in '58 (Million Pounds)
Acrylic	120.0	96
Dinitrile	—	30
Polyamide (nylon)	350.0	96
Polyester	50.0	10
Polyethylene	5.0	—
Polyvinyl acetate	0.8	—
Protein	6.0	—
Vinylchloride-vinylidene chloride copolymer (Saran)	30.0	—
Polystyrene	0.3	—
Tetrafluoroethylene	0.1	—
Total	560-565	230-235

TABLE IV
U. S. PRODUCTION IN 1955 AND 1956 OF SYNTHETIC ORGANIC CHEMICALS

Chemical	Production 1,000 Pounds 1955	Production 1,000 Pounds 1956	Sales Unit Value Per Pound 1955	Sales Unit Value Per Pound 1956
Acetic acid, synthetic 100%[a]	524,403	549,818	.08	.08
Acetic anhydride, 100% from all sources	841,668	909,736	—	—
Acetone, total	538,808	606,643	.06	.07
By fermentation	27,448	23,494	.07	.07
From isopropyl alcohol	434,798	499,184	.06	.07
All other	76,562	83,965	.05	.06
Acrylonitrile[b]	117,868	140,569	.29	.27
Carbon disulfide	566,225	555,142	.05	.05
Cellulose acetate	402,228	450,306	—	—
Dichloromethane (methylene chloride)	73,963	95,391	.10	.11
Ethylene glycol	881,181	1,020,656	.12	.12
Formaldehyde (37% HCHO by wt)	1,258,983	1,398,249	.03	.03
Isopropyl alcohol (100% basis)	854,750	1,062,974	.05	.07
Isophthalic acid	50,000	—	—	—
Methanol, synthetic[d]	1,343,563	1,592,199	.04	.05
Terephthalic acid	75,000	—	—	—
Styrene monomer	1,013,940	1,175,645	.17	.16
Vinyl acetate, monomer	133,674	163,873	—	.16
Vinyl chloride (chloroethylene), monomer	528,605	596,520	.10	.11
Wood pulp[c]				
Standard viscose rayon grade			.0925	
High tenacity viscose rayon grade			.0975	
For acetate and cuprammonium			.1125	

[a] In addition, production of natural acetic acid totaled 22,792,000 pounds.
[b] American Cyanamid, the largest producer of acrylonitrile, recently announced it would more than double 50 million pound acrylonitrile capacity. Carbide & Carbon will double its acrylonitrile production by the second quarter of 1958 at its Charleston, W. Va. plant. Capacity at Institute, W. Va. is estimated at 70 million pounds. B. F. Goodrich's 1958 capacity at Calvert City, Ky., is estimated at 24 million pounds. Monsanto recently announced it will boost production to more than 100 million pounds a year; part will go to meet Chemstrand's expanding needs.
[c] Cellulose consumed in production of acetate yarn and staple in 1956 was 165,600,000 lbs, 87% dissolving wood pulp, 13% purified cotton linters pulp.
[d] In addition, production of methanol from natural sources totaled 14,568,000 pounds.

vacuum ends down collection

YIELDS BETTER YARNS

An expert tells how vacuum ends down collection works, describes the system's advantages and discusses some problems connected with its use.

By George A. Archer
PNEUMAFIL CORP.

A VACUUM ends-down collection system for the spinning frame consists of a pneumatic material recovery and cleaning system; a set of suction tubes or flutes replacing the scavenger rolls on the spinning frame a collecting header or duct, and a motor driven fan-filter-collector unit. The flutes are provided with suction orifices spaced to coincide with the roll deliveries and positioned near the yarn path leading from the nip of the rolls. They are connected to the collecting header which runs the length of the frame beneath the creels or samsons. The header is connected to the suction intake of the collector unit, which usually is mounted above the frame drive.

Air is drawn continuously into the suction flutes from the entire drafting system and across the material being spun. Free lint and foreign matter is removed from the yarn as it emerges from the front rolls. Likewise, a large percentage of floating fly and fibers in the vicinity of the yarn path is sucked into the system and collected before it has an opportunity to settle on the frame or be dispersed throughout the spinning room. When an end comes down, the drafted roving leaving the front rolls is picked up immediately by the corresponding suction orifice and conveyed pneumatically to the collector unit where it is accumulated in the form of open loose material ready for reprocessing.

"Wild" or "flying" ends and resulting doublings are eliminated. The "vacuum cleaning" effect provided at each roll boss collects practically all free fibers and fly released in this area. Consequently, there are fewer slubs and gouts. For example, those bits of fly which formerly fell into and became entangled in the yarn near the delivery rolls, become entrapped in the vacuum air stream and are sucked into the system and deposited into the collector unit.

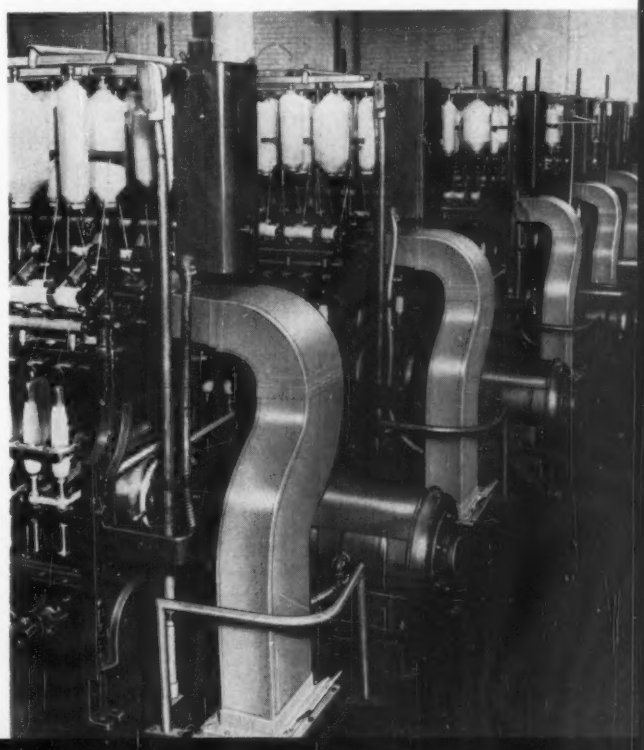
Also, obviously those slubs and gouts caused by removing, cleaning and replacing the conventional scavenger roll are eliminated. Since the vicinity of the front roll is being constantly deprived of lint by the suction system, there are fewer particles of lint falling upon the roll, and therefore less material being picked up by the clearers.

We all know that clearers are a source of slubs and gouts. When a clearer is picked too often, excessive gouts are formed during the picking operation itself. It is well known that when a clearer is picked too seldom, large bunches of fly slough off into the yarn, causing more gouts and slubs. The decreasing of clearer waste is a definite aid to quality.

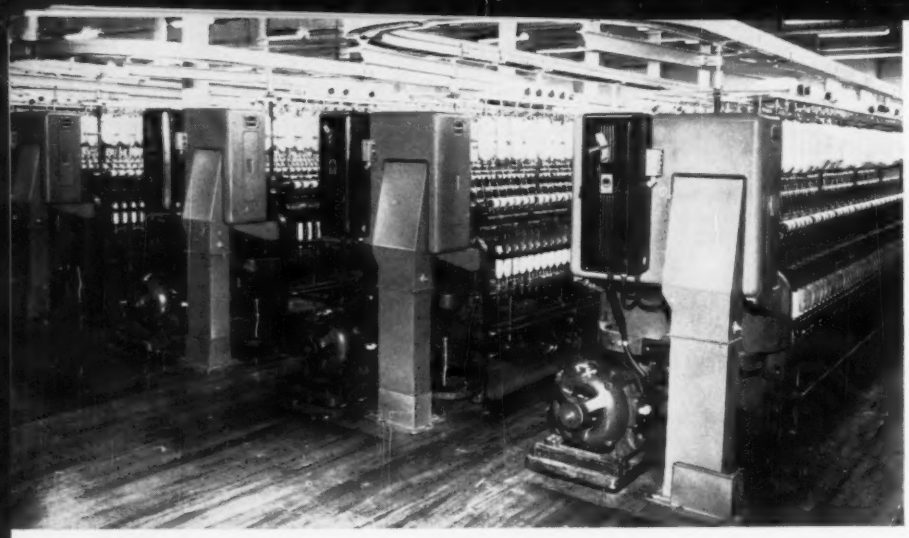
Because of the same reduction of lint in the air, spinning guides normally are run out only half as often after the application of the suction equipment. As in any cleaning operation, slubs and gouts are created every time guides are run out. Of course, even more are created if the guides are not run out often enough. The decreased *need* for cleaning is a definite quality asset in this case.

In like manner, all parts of the creel and even all parts of the frame above and below the roll beams stay substantially cleaner where the vacuum system is used. When the correct air quantities are moved by the fan, the air in the spinning room is filtered many times per hour. A very real proof of the amount of cleaning done by the vacuum ends-down collection system is the fact that normally the quantity of sweeps from the spinning room is reduced by 50%. The staple of the sweeps becomes shorter since the longer fibers are reclaimed.

Ends-down are usually reduced between 25% and 50% where the equipment is properly tailored to the frame and to the type of stock being run. Also, careful attention must be given to the length of the staple and the denier. We have found it futile to go "elephant hunting" with a squirrel gun!



CUTS DOWN WASTE—The central material recovery system of this Pneumafil installation delivers the fiber directly to the pickers. It also eliminates bulky collector units in the spinning room.



SAVINGS ON HEAT—The central type equipment shown here has individual frame material collection and duct work which exhausts the heat to the outside or returns it to the room as conditions demand.

Frequently, there is doubt expressed concerning the usual reduction in ends-down. Let us first consider a mill that experienced a reduction of 30% in ends-down after installing a vacuum collection system. Between 10% and 15% of the ends-down which usually come down can be attributed to being caused by other ends coming down. The balance of the 30% obviously is because of the fewer balls of lint falling into the yarn and causing breakage at some point such as the traveler.

The effect on quality and ends down in connection with higher drafts is dramatic. For example, with drafts of 40 and above, it is not uncommon for mills to experience reductions of 50% or more in ends-down. I know of one case where the ends per thousand spindle hours was more than 50, and dropped to less than 20 after the application of the vacuum collection system. Admittedly, this is extreme; but in quite a number of cases 40 to 50 ends down per thousand spindle hours dropped to between 20 and 25.

It is common knowledge that the higher the draft, the more fly, and the longer the staple of this fly. There is very little difference in the amount of fly made with a draft of 15 and that made with a draft of 25. In one test, this amounted to just a little less than 5/10 of one per cent of production. However, the total fly made in this same spinning room, using a draft of 40, is a little more than 75/100 of one per cent.

The importance of the effect of the vacuum system on the fly is pointed out by the following actual test results in a well known mill:

1. Ends down reduced 24%.
2. Yarn defects caused by accumulation of fly falling into and spinning into the yarn, reduced by 73%.
3. Fly in atmosphere reduced by 50%. Accumulation of fly on the frames reduced by 75%.
4. The amount of sweepings reduced by 2/10 of 1% of production.

The majority of the reduction in sweepings (if not the entire amount) resulted from the fact that the vacuum system collected those fibers which were only entangled for a short part of their length, and which would have been shaken or blown off had they not been collected by the suction system. Since it was assumed that up to 2/10 of 1% of the total production represented an increase in the finished product obtained on a given amount of raw stock, it was considered well to inspect the contents of the vacuum collector. It was found that out of an average of 37.8 grams collected per frame hour, the accumulation could be divided as follows:

Pneumatic "combing"	23.6 grams
Atmospheric Fly	0.1 grams
Ends Down	14.1 grams

Another type of analysis of the contents of the collector box was made in which it was determined that vacuum collected waste showed .9% decrease in maximum staple length as compared with the staple length of the roving. The same was true of the maximum staple length of scavenger roll waste reworked. However, the staple diagram analysis showed further that while there was a loss of approximately 5.3% in "effective" staple length for scavenger roll waste, there was only a loss of 1.9% in "effective" staple length for vacuum collected waste.

Tracing the quality from the spinning frame on to the winders or spoolers we find here also a very definite effect. There are from 15 to 40% fewer winder breaks or tailings from the spoolers. Here again there is a definite tie-in with the draft in the spinning room. The higher figure of reduction comes from a mill using high draft for the spinning. This, of course, is logical since we know that every end down is a potential winder or spooler break.

Weaving is affected in the same way. Every end down in the spinning room is a potential end down on the loom, as the piecing proceeds from the whip roll to the cloth roll over the "obstacle course", consisting of the drop wires, the heddles, and the reed. In the filling, the piecings must successfully thread through the shuttle eye.

Then, of course, in addition to the piecings, the numbers of slubs and gouts in both filling and warp are affected by the vacuum collection system, and these bunches of fiber are vulnerable to the "obstacle course", just as in the case of piecings. One mill reported 25% reduction in warp breaks, and a 20% increase in weaver assignments after installations of the vacuum collection system. It is interesting to note that this same mill reported a 30% reduction in spooler re-ties.

Flutes

Problems connected with spinning ends-down collection are very real. Take for example the problem of the flute. Life would be very simple if a single type of flute would best suit all purposes. By slow, heart breaking, trial and error it has been found that one type of flute suits best the cotton and shorter fiber rayons of light denier. Another is better suited to the coarser and longer staples. And still another is indicated in the case of the extremely coarse synthetics, jute, flax, asbestos, and other difficult fibers.

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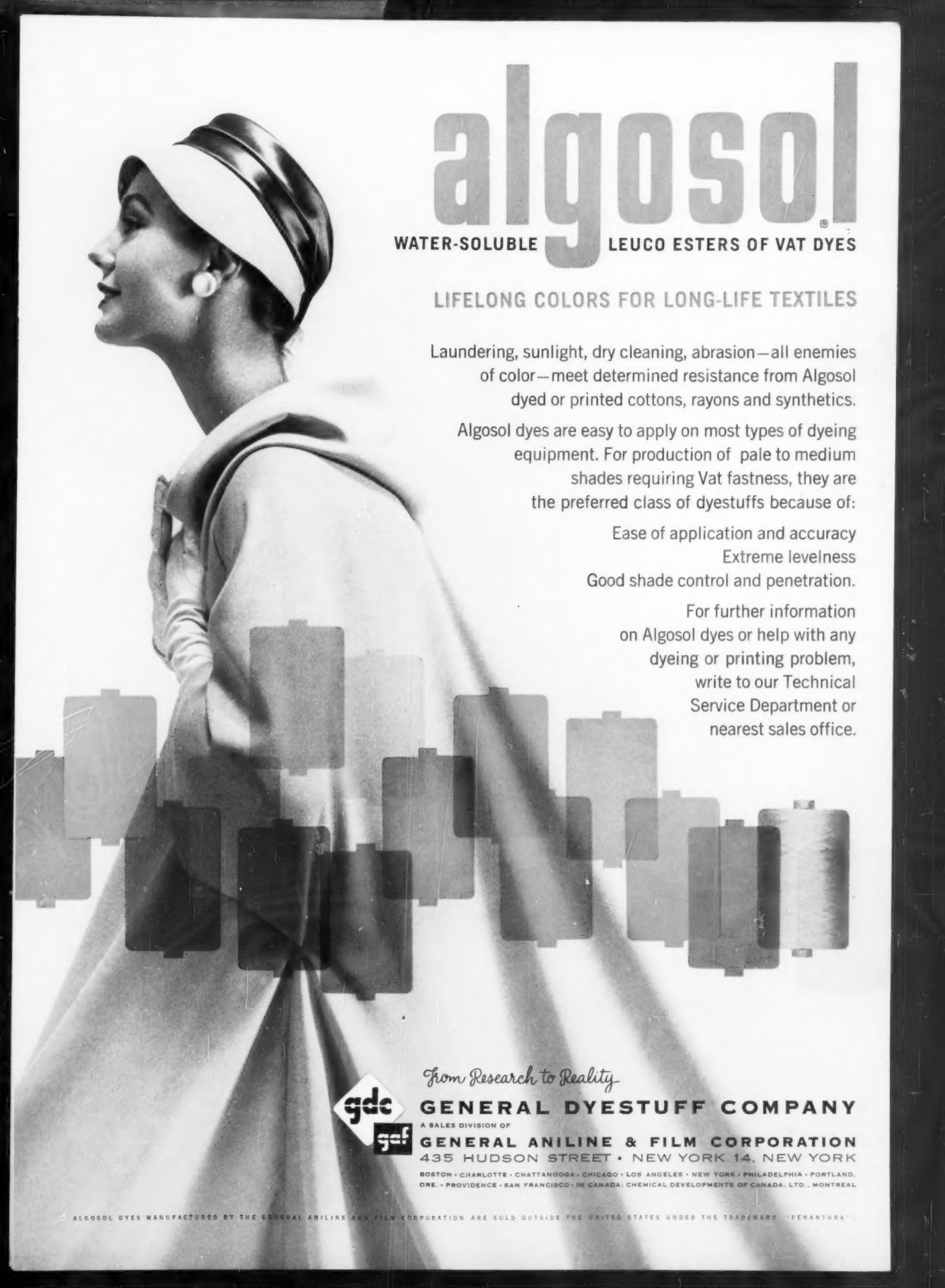

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REPORT FROM EUROPE

BY SPECIAL CORRESPONDENT

GATT signatories wrangle over export markets; Japanese labor costs rated lowest by ILO

GENEVA—Charges and countercharges marked another session—the 12th—of the Contracting Parties to the General Agreement on Tariffs and Trade which concluded here last month. But behind the stormy official language, the 39-nation horsetrading operations went along quietly—with some meaningful implications for textiles.

Attackers and Defenders—As has become usual at these GATT sessions, the attackers usually are low-cost nations, the defenders the high-cost industrial countries. Thus, the U. S. took its usual beating over Section 22 of the Agricultural Act which allows it to impose import curbs on cotton and other goods. U. S. export assistance, administered by the Dept. of Agriculture under Public Law 480, was also raked over the coals.

The U. S. States Its Case—The U. S. defended itself along these lines: U. S. cotton exports under the program dropped from $2.75 million in 1956 to $1.75 million in 1957; the policy tended to stabilize prices, and beneficiaries were India, Pakistan, Indonesia, Korea, Japan, Israel and Turkey. But the counter-attackers said U. S. exports meant higher surplus stocks abroad and loss of foreign markets by such producers as Pakistan, Turkey, India.

Germans Also on Defensive—The Germans told GATT that all textile import quotas would end Jan. 1, 1958. This would include cotton, wool, linen and silk. But most GATT nations felt Germany's strong position should have enabled her to withdraw import quotas on *all* goods, because she can no longer rely on GATT Article 12 (permitting import quotas when payment balances are poor).

Japan An Aggrieved Nation Too—It is unusual when Japan takes the offensive on matters relating to low-cost exports. But Japanese objected to continued discrimination against use by a number of nations of Article 35 (cancelling most favored nation treatment for Japan although granted to others). And they charged that India, rather than Japan, constituted the real threat to world's textile producing nations.

About the same time, however, the International Labor Organization's Textile Division in Geneva was declaring that Japanese textiles can undersell those produced anywhere in world. The report noted that Japanese textile industry is highly productive in terms of workloads (one operator can handle 1,600 to 2,400 spindles; compared with 1,400 to 2,600 in the U. S., 800 in the United Kingdom and 380 in India.

Japanese Costs Are Lowest—C. B. Kumar, head of ILO's Textile research staff summarized: "It is small wonder that ratio of total wage bill to production costs in one leading group of Japanese mills works out to only 6% in the case of 20s yarn while it is 24% in Indian mills." Average wage per pound was said to be 1.8¢ in Japan, 7.5¢ in the U. K., 8.6¢ in the U. S.

British Outlook Uncertain—Sir William Palmer, chairman of the British Man-Made Fibers Federation said at group's annual meeting in London that "For many reasons, it would be exceptionally rash to forecast the future." The year 1957 was characterized by stability, he said, but import restrictions had risen in some of Britain's traditional overseas markets, while the cheaper ones were still dominated by Japan.

He noted that British consumers were upgrading purchases which, for the man-made fiber trade, means greater demand for better yarns. Merger of Courtauld's and British Celanese, he said, may be considered a strong point; however, Britain's entire economy requires some correction. Whatever measures the Government takes will be bound to affect the textile industry in an, as yet, unpredictable manner, he stated.

(Continued on Page 56)

Man-Made Fiber Textiles

(Continued from Page 32)

lion pounds a year. By March 1958 the annual capacity is expected to be 2,468 million pounds and a further increase to 2,574 million pounds is expected by November of that year.

Current capacity of rayon producing industry is estimated at 1,114 million pounds, composed of 681 million pounds of yarn and 433 million pounds of staple and tow. By March of 1958 the rayon capacity is expected to increase to a total of 1,236 million pounds of which 689 million pounds will be yarn and the balance staple and tow. For acetate, the productive capacity of the industry is now 415 million pounds

(Continued on Page 40)

TABLE V

DOLLAR PRICE FLUCTUATIONS OF SOME RAW MATERIALS USED FOR MAKING OR TREATING FIBERS[a]

(Price listing, unless otherwise indicated, is for one pound unit)

			1952	1953	1954	1955	1956
Acetic acid, glacial	100 lb	High	22.00	15.00	15.00	15.00	15.00
		Low	15.00	15.00	15.00	15.00	15.00
Acetic anhydride		High	.145	.145	.14	.14	.14
		Low	.145	.14	.14	.14	.14
Acetone		High	.085	.085	.085	.075	.08
		Low	.085	.085	.075	.070	.07
Acrylonitrile monomer		High	.43	.43	.31	.31	.28
		Low	.43	.36	.31	.27	.27
Adipic acid		High	.305	.37	.37	.35	.35
		Low	.265	.305	.37	.35	.32
Benzene	one gal	High	.30	.40	.40	.36	.36
		Low	.30	.40	.40	.36	.36
Butadiene[a]		High	.125	.15	.15	.15	.15
		Low	.115	.125	.15	.15	.15
Caprolactam monomer[b]		High		.60	.60	.60	.60
		Low		.60	.60	.60	.60
Caustic soda flake 76%	100 lb	High	3.75	4.10	4.25	4.50	4.70
		Low	3.75	3.75	4.10	4.25	4.50
Cellulose acetate flake	100 lb	High	.43	.43	.43	.35	.35
		Low	.40	.40	.35	.35	.35
Cyclohexane[c]		High	.0925	.55 gal	.55 gal	.55 gal	.55 gal
		Low	.0925	.0925	.55 gal	.55 gal	.55 gal
Dimethyl formamide[b]		High			.33	.33	.33
		Low			.33	.33	.33
Ethylene glycol		High	.17	.17	.145	.135	.135
		Low	.17	.145	.115	.13	.135
Formaldehyde		High	.0395	.0395	.0395	.0395	.0395
		Low	.0395	.0395	.03	.03	.0375
Furfural[a]		High	.108	.155	.12	.12	.12
		Low	.105	.108	.115	.12	.12
Hexamethylene diamine[d,e]							
Hydrocyanic acid[f]		High	.75	.75	.75	.75	.75
		Low	.75	.75	.75	.75	.70
Isopropyl alcohol	one gal	High	.43	.46	.42	.39	.41
		Low	.40	.42	.39	.39	.41
Methanol	one gal	High	.70	.70	.70	.75	.75
		Low	.70	.70	.70	.70	.75
Methylene Chloride		High	.135	.135	.135	.125	.1175
		Low	.125	.135	.135	.1125	.1125
Phenol (90-92%)		High	.1725	.17	.16	.15	.16
		Low	.1675	.16	.14	.14	.15
Terephthalic acid[g]		High	.33	.35	.35	.34	.34
		Low	.33	.35	.35	.34	.34
Vinyl acetate monomer		High	.1975	.1975	.1650	.1650	.1650
		Low	.18	.1550	.1550	.1650	.1650
Vinyl chloride monomer		High			.1350	.1050	.11
		Low			.1050	.1050	.11

[a] May be used in making hexamethylene diamine or adipic acid.
[b] Price indicated by supplier.
[c] Used for making adipic acid and/or hexamethylene diamine.
[d] Not available on open market (see below).
[e] This may be made from adipic acid, furfural, butadiene.
[f] Used in making nitriles.
[g] This is made from para xylene.

Recent quotations for some other chemicals not listed above:

Carbon disulfide (tanks)	.0525
Corn protein (Zein for making "Vicara" protein fiber)	.38
Ethylene	.06
Hexamethylene diamine (see footnotes d and e above)	.65 (est.)
M-xylylene diamine	.50-.70
Methyl acrylate (for modifying Acrilan) tank cars	.37
Methyl vinyl pyridine (for Acrilan)	.45 (est.)
Propylene	.03
Vinylidene chloride	.16

NEW FABRICS

NEW YARNS

Metlon-Mylar in Colors

Metlon Corp., manufacturer of metallic yarns, has developed a line of colors for Metlon-with-Mylar that will blend with all basic shades of both wearing apparel and home furnishings fabrics. In addition to gold and silver, the metallic yarn now is available in emerald green, dragon red, bronze, royal blue, bluish pink, cornflower blue and copper. Metlon's Mylar yarns are said to be machine washable and dyeable.

Absorbent Perlon

Farbenfabriken Bayer, Leverkusen, West Germany, has developed a fully-absorbent Perlon (nylon 6). Water absorbent properties of Perlon hosiery recently were demonstrated. Cost is said to be little more than normal yarn and absorbent hose is offered in all qualities retailing from $1.20. Bayer reports that the process used on Perlon can be applied to other polyamides, such as nylon 6,6. Present research suggests it will be possible to offer yarn not only absorbent but also completely anti-static and sterile.

Dynel Filter Cloths

Substantial savings in material and labor costs in manufacture of high quality cement through use of Dynel filter cloths are reported by Lone Star Cement Corp. Lone Star, which produces Incor 24-hour Portland cement by the wet blending process, employs Dynel fabrics for slurry filtration in both rotary drum and disc sector units. The fabrics, woven from Union Carbide's acrylic fiber, are reported to provide nine times the useful performance life over previous materials. Lone Star explained that Dynel's resistance to alkaline solutions, acid and abrasion is its chief reason for use in slurry filtration. *For further information, write the editors.*

Chromspun Acetate Rugs

Regal Rugs has introduced decorative area rugs of 100% Eastman lifted Chromspun acetate. These cut-pile washable rugs, available in four designs, are reported to have the carpet advantages of Chromspun, including slow soiling, easy cleaning, resistance to matting and great resiliency. *For further information write the editors.*

New Colorfast Yarn

American Bemberg has introduced a new rayon yarn, currently known as Type 51, with color applied at irregular intervals along its length. Although Type 51 is dyed in the spinning process before it is dried, the manufacturer emphasizes it is not a solution dyed yarn where pigment is incorporated in the spinning solution. The color in Type 51 is applied and cured after the yarn is formed by an American Bemberg exclusive process. The process is said to give the yarn a fastness equal to solution dyed yarns, with a rating of over 100 hours in the fadeometer, and excellent washability at 160 degrees F. *For further information write the editors.*

New Cloth-Like Paper

Scott Paper Co. has developed a cloth-like material combining many of the advantages of paper and textiles and said to offer substantial savings in a variety of end products. Called Dura-Weve, it is now being used to make headrest covers, hand towels, tablecloths, disposable examination garments for clinics, and operating room sterile drape sheets. The new paper cloth consists of a laminate of rayon scrim material with two or more plies of high wet-strength paper. Other materials—polyethylene, for example—can be substituted for one of the paper plies.

The NFT Leaves the Textile Scene

Converters and other fabric merchants in the New York market who have long had cordial relations with the National Federation of Textiles and have made use of its arbitration and design registration services will be interested in the future of this organization. As already noted in these pages, the NFT has merged with the American Cotton Manufacturers Institute. Miss Irene Blunt, for many years executive director of NFT has retired and has taken up residence in her new home in Fort Lauderdale, Fla.

The formal merger of NFT and ACMI will be carried out on May 1, according to a joint announcement by L. C. Hardman, Jr., of Commerce, Ga., president of ACMI and Andrew J. Sokol of New York, president of NFT. The announcement said the preliminary details had been worked out and that an agreement setting forth provisions of the consolidation had been signed.

The NFT organization will be dissolved by May 1 and a Man-Made Fibers and Silk Division of ACMI will be formed, to operate in the present NFT quarters in New York, at 389 Fifth Avenue. The New York office of ACMI, of which John W. Murray has been director since 1949, will be operated in conjunction with that of the Man-Made Fibers and Silk Division. Murray will move from the present ACMI headquarters at 40 Worth Street to the NFT offices this week to assist during the transition period.

The agreement provides for the appointment of a Man-Made Fibers and Silk Committee by ACMI to work closely with the Man-Made Fibers and Silk Division. This committee is to be composed of: R. Stewart Kilbourne, William Skinner & Sons, Holyoke, Mass.; Jacques Weber, Bloomsburg Mills, Inc., Bloomsburg, Pa.; and the following all from New York City: Jack Altman, United Merchants & Mfrs., Inc.; William N. Chace, Greenwood Mills, Inc.; William C. Curtis, J. W. Valentine Co., Inc.; J. Calhoun Harris, Deering, Milliken & Co., Inc.; Hans W. Hilgert, Dundee Mills, Inc.; Edward P. Ix, Frank Ix & Sons, Inc.; Reuben Kittenplan, Chopak-Kittenplan Corporation; Edmon G. Luke, Amerotron Corp.; H. Beekman Schaeffer, Stonecutter Mills Corp.; Robert M. Schwarzenbach, Schwarzenbach Huber Co.; Andrew J. Sokol, J. P. Stevens & Co., Inc.; Donald B. Tansill, M. Lowenstein & Sons, Inc.; Jackson E. Spears, Burlington Industries, Inc.; George H. Day, II, Chicopee Mills, Inc.; Arthur E. Menke, Glen Raven Mills, Inc.; Leon J. Weil, Kahn & Feldman, Inc.

Provision is also made for the election of three members of the ACMI Board of Directors from the present NFT membership, as well as two members of the ACMI executive committee and membership on other ACMI standing committees. ACMI will continue to operate the services now being provided by NFT in accordance with direction from the ACMI Board of Directors.

Agreement on the consolidation came after many months of discussion. The Board of Directors and membership of both organizations approved a general plan for consolidation last spring and joint committees have been working on details since that time.

At present NFT represents about 75% of the man-made fibers and silk industries, while ACMI represents about the same percentage of cotton spindles in the nation. NFT members with about 72% of the looms represented in that organization are also members of ACMI. These include mills with both cotton and man-made fibers operations. NFT was formed in 1932 by the merger of the Silk Association of America and the National Rayon Weavers Association. ACMI was formed in 1949 by the consolidation of the American cotton Manufacturers Association and the Cotton-Textile Institute.

Textile Trainees Available

Looking for some bright youngsters with a keen interest and sound training in textiles to join your staff? From February to June, senior "cooperative" students of New York City's Fashion Institute of Technology will be available for work periods in the fashion industry. Among them will be textile students to do repeats and color combinations, original designs for all fabrics and similar tasks. If interested write or telephone Miss Hilda A. Wiedenfeld, Textile Distributors Institute, 469 Seventh Ave., New York City, Longacre 7-2992.

Improved Textile Dictionary

A second printing has become available of The Modern Textile Dictionary by George E. Linton. The book, which defines more than 12,000 textile terms, has been revised and brought up to the minute so as to provide accurate definitions of many new textile terms and technical developments introduced in recent years. The scope of the dictionary, Dr. Linton points out in his preface, ranges from apparel to asbestos, from fabrics and finishes to fashion and style; it includes material covering the textile ground from the history of costume to management and labor, from manufacturing to textile testing, and from plastics to spot and stain removal and the care of clothing.

Significant terms, old and new, domestic and foreign, broadly used and limited to some one area, have been included. The author has carefully defined technical terms and phrases along with important trade names. All in all, this big book represents a vast amount of careful, painstaking labor by a man whose background and ability uniquely qualifies him to write a comprehensive textile dictionary. Every textile manufacturing plant, laboratory, sales office and school should find this book useful. Published by Duell, Sloan & Pierce, 124 East 30 St., New York. 772 pages, hard covers, illustrations, $12.50.

Man-Made Fiber Textiles

(Continued from Page 37)

annually, made up of 297 million pounds of yarn and 118 million pounds of staple and tow. No change is indicated in the acetate capacity over the next two years.

Some estimates as to the consumption totals for man-made fibers are given in Table II.

The United States civilian per capita fiber consumption for 1956 was 34.7 pounds consisting of 9.1 for man-made fibers, 22.6 for cotton and 3.0 for wool.[7] The population in 1975 is expected to reach 193.4 million people, at which time the average number of pounds consumed per person per year is estimated to be about 36 pounds apportioned at 17.0 pounds for man-made (synthetics), 17.0 pounds for cotton and 2.0 pounds for wool. The U.S. fiber consumption is thus conservatively estimated to reach in 1975 to over 7 billion pounds.

TABLE VI
MATERIALS FOR SOME MAN-MADE FIBERS

Acetate	Cotton linters/wood pulp Acetic acid Acetic anhydride Sulfuric acid Acetone Caustic soda—for saponification
Acrilan	Acrylonitrile[a,b] Vinyl acetate[b] Other vinyl or acrylic compounds (methyl vinyl pyridine, methyl acrylate) Dimethyl acetamide
Dacron	Dimethyl terephthalate Ethylene glycol (The production of these chemicals involves the use of basic materials such as p-xylene, ethylene, methyl alcohol, caustic soda, chlorine, sodium carbonate and nitric acid.)
Dynel	Vinyl chloride Acrylonitrile[b] Acetone
Nylon 6 (polycaprolactam)	Cyclohexanone Hydroxylamine
Nylon 66	Adipic acid Hexamethylene diamine (The production of these chemicals involves the use of basic materials such as phenol, benzene, hydrogen, ammonia and caustic soda. Other chemicals that may be used for making adipic acid or hexamethylene diamine are furfural and butadiene.)
Vicara	Corn protein (Zein) Isopropyl alcohol and formaldehyde
Viscose Rayon	Wood pulp/linters Caustic soda Carbon disulfide Sulfuric acid

[a] Other acrylics recently announced in the U. S. are Creslan by American Cyanamid, Verel by Eastman, Zefran by Dow and Darlan by Goodrich.

[b] The preparations of acrylonitrile and vinyl acetate involve the use of basic chemicals such as ethylene oxide or acetylene, chlorine, caustic soda, hydrocyanic acid, potassium sulfate or ammonium persulfate, acetic acid or its salts such as sodium acetate.

Recent estimates as to U.S. non-cellulosic fiber capacity point to an 800 million pounds per year capacity for 1958 as seen in Table III.

Chemicals

Table IV lists the 1955 and 1956 United States production of some synthetic organic chemicals used by the textile industry and which have been reported by the U. S. Tariff Commission and other sources.

Table V gives the dollar price fluctuations for the past five years of some raw materials used for making and treating fibers.

Table VI lists the raw or basic materials that are used in making some man-made fibers.

Intense interest is being shown on both sides of the Atlantic in fibers made from cheap hydrocarbons, i.e., ethylene, propylene and butylene, Polyethylene and polypropylene may be too low in melting point for general fiber use, such as in wearing apparel, but future research on these and higher olefins may lead to new or modified products of greater utility.

TABLE VII
QUANTITIES OF RAW MATERIAL REQUIREMENTS FOR SOME MAN-MADE FIBERS[10, 11, 12]

	Pounds of Chemical Used Per Pound of Fiber
Acetate	
Cotton linters	0.625
Acetic anhydride (Net (used in chemical combination and not recovered))	0.6
Acetic acid (Net (used in chemical combination and not recovered))	
Sulfuric acid	0.05
Acetone (lost during processing and recovery)	0.28
Acrilan	
Acrylonitrile	0.85
Vinyl acetate	0.15
Dacron	
Dimethyl terephthalate	0.86
Ethylene glycol	0.31
Dynel	
Acrylonitrile	0.4
Vinyl chloride	0.6
Acetone	0.2
Nylon 66	
Adipic acid	0.620
Hexamethylene diamine	0.554
Orlon	
Acrylonitrile	1.0
Dimethyl formamide	0.2
Viscose rayon	
Wood pulp/linters	1.15
Caustic soda	0.95
Carbon disulfide	0.35
Sulfuric acid, 60°Be'	1.45

Based on the preceding tables, the chemicals required for making some non-cellulosic fibers (excluding finishes, dyes and textile auxiliaries) are estimated to be approximately as shown in Table VIII.

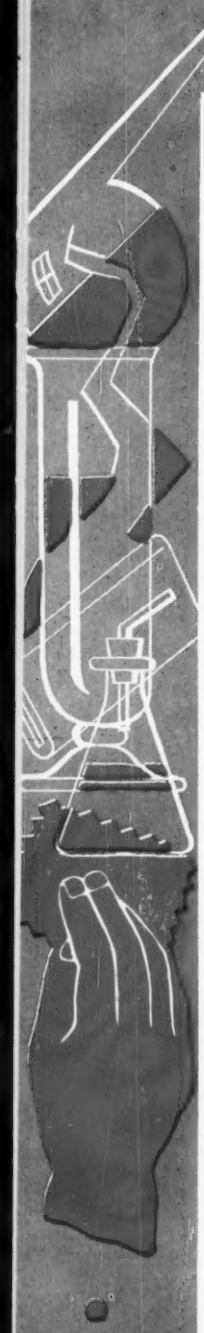
It can be seen from these estimated figures, that to produce 1,981 million pounds of man-made fibers, 4,859.5 million pounds of basic chemicals are required. In other words, one pound of man-made fiber will require approximately 2.45 pounds of basic chemicals. As stated before, the amount of all chemicals required including finishing agents, and dyestuffs will be considerably higher.

Conclusion

It is seen from the above statistics, relating only to the production of some well established polymers

(Continued on Page 46)

DYEING and FINISHING SECTION



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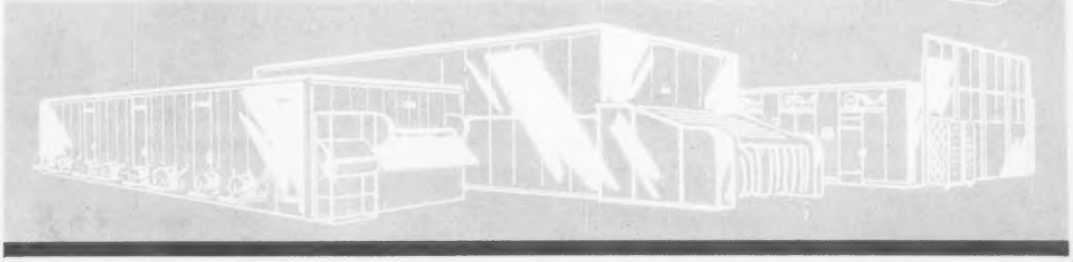

REPORT FROM JAPAN

Too much production plagues Japanese textiles; But rayon exports this year will reach postwar high

By B. Mori

OSAKA—As end of 1957 approaches, "curtailment" is still watch-word for Japan's textile industry. Inventories in dealers' hands remain excessive—at all levels of cotton and rayon businesses from yarn producing plants to apparel wholesalers. Cuts in production already made have not been deep enough, or not been observed widely enough by smaller manufacturers to rectify inventory burden problem materially. Prices in general continue depressed.

Bankruptcies Are Frequent—A symptom of current situation is continued rash of bankruptcies among smaller textile merchants including those in wholesale fabric and apparel industries. The Government is faced with a dilemma: To provide easier credit for such firms is to perpetuate weakness of entire Japanese textile-distribution system—the existence of many under-capitalized firms. But to allow bankruptcies to continue poses a grave unemployment problem, and is, at very least, bad politics for party in power.

The Government recently pushed through the Diet a new law which permits smaller producers to form production-control cartels, and force all members of their industry to abide by cartel decisions.

Synthetics Exports Reach Postwar Highs—Despite difficulties in domestic market, the year has been a good one for export. Although final figures are not available, it appears that exports of spun rayon fabrics will easily set a new record. Exports in the January-September period were 653 million square yards against 471 million in 1956. Exports of rayon staple will be highest in postwar era; exports of spun rayon yarns will be highest on record for any year. Filament yarn is headed also for a postwar high; while filament woven fabrics will be the only item down from postwar high of 1956.

The production curtailment program has had some effect on rayon staple output—down about 10% in 1957—and other branches of the rayon industry generally. The "new" fibers in Japan, acetate and "true" synthetics, continue to grow steadily, however.

Conciliation is Tokyo Mood—Government officials here are looking forward to agreement soon by Washington with proposals for 1958 cotton goods quotas. As they wait for the good word, they express surprise and some pain at opposition in U. S. textile and garment manufacturing circles to quota changes that might ease what Japanese think are inequities in 1957 quotas.

Du Pont Orlon for Japan?—At this writing, Du Pont was negotiating with several Japanese firms to permit manufacture of Du Pont's Orlon acrylic fiber here under license. There are several acrylic fibers being manufactured on a pilot scale, or contemplated, already.

Too Many New Fibers—There have been some reports in the local press that the Government is worried about the multiplicity of synthetics being made or to be made in Japan. Implication seems to be that Japan cannot afford to pay royalties to foreign licensors for privilege of conducting a battle among synthetics for markets here. However, no one in the Government has yet come forward asserting his ability to judge among the synthetics. The strongest point the industry has is the rapidity with which synthetics have been accepted in consumer and industrial end uses and the strong unfilled demand which is still felt.

Production of rayon pulp in the first nine months of 1957 was 304,000 metric tons, compared with 267,000 tons in the same period of 1956. Production of dyestuffs was 17,000 tons, compared with 16,500 in the same period of 1956.

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Ends Down Collection

(Continued from Page 34)

Then there are the problems of the best type adaptation to the various makes and types of frames, The size and shape of the orifices have a lot to do with the performance of the equipment. An important problem is that of the metal flute versus the plastic flute. In earlier days, all flutes were made of metal. A stand hook slipped, and it was almost cheaper to buy a new flute than to repair and smooth the orifice. With the plastic flute, usually a drop of acetone brushed on with a camel hair brush makes the scratch lint-free again. Metal still must be used in certain applications, but the more easily maintained plastic is indicated where possible.

There have been cases where we have departed from the round cross section. Cleaning and maintenance is made more difficult and invariably the pendulum swings back to the round, or nearly round, cross section.

Flutes of all sizes, from about ⅞" in diameter up to about 1⅛" in diameter, are used. Here is a real problem. To handle the quantities of air that are indicated even the largest flutes in use are minimum. When the large flute became a problem as far as getting it out of the spinner's way, then methods of pushing back and repositioning the orifices were developed.

Another problem was how to exhaust the air. Originally, with a scroll type fan, the exhaust could either be pointed upward or downward. Pointed upward it spotted the ceiling. Pointed downward it gave an unsatisfactory temperature and humidity distribution along the spinning frame proper in many cases. Later, the diffusor type exhaust permitted the handling of the air in any direction, or as many directions as desired. This has proven extremely important in the spinning of certain fibers where strong air currents of any kind can be disastrous.

This later type fan, with the diffusor venturi, also solved another problem. The old type scroll exhaust fan had a good efficiency, but only when it was operated exactly at a certain pressure and volume. As is characteristic of such fans, should the desired pressure and volume be between optimum operating characteristics of two fan sizes, it became difficult to secure optimum results. A later diffusor type fan had a much better efficiency curve, equalling the efficiency of the scroll type fans at their respective maximum points, but far exceeding the efficiency of the scroll type fan at intermediate points because of the flat curves.

Heating the Spinning Room

Perhaps one of the most constant complaints from the very first was caused by the problem of added heat to the spinning room. The central type of equipment proved to be the answer to this problem. In this case, a central motor and fan draw air from a group of spinning frames, exhausting it usually outdoors in the summer time, or returning it to the air conditioning system in the winter time.

Of course, when the air conditioning is operating with refrigeration, air is returned to the air conditioning system at all times. In this way, the heat from the fan motors is not liberated into the room. The central vacuum system can be extended to enclose the spinning frame motor if desired. In one case of this kind, first of all the fan power heat amounting to some 4,000 BTU per hour per frame was taken out of the room.

The heat from the spinning frame motor casing, amounting to say 2,500 BTU per hour, is exhausted. Thus, approximately 6,500 BTU per hour per frame can be exhausted from the room, to say nothing of the additional heat which rises by convection from the many heat producing bearings along the frame and is sucked into the vacuum system flutes.

More Evenly Distributed Heat

In this way it is possible to wind up with much more evenly distributed temperature and humidity when using the central type of system with fewer heat units in the room, instead of added heat and greater differentials of temperature and humidity. Stress is placed on the distribution of the humidified air because it is common knowledge that this factor plays a tremendously important part in the running of the work and the consequent quality.

A certain amount of care in manufacturing and in operating vacuum waste equipment is necessary to insure "untwisted", easily respinnable fiber. The central material recovery system, a special adaptation of the central type vacuum collection system described above, delivers the collected fibers directly to the picker or blending feeder, as they are picked up. With this type of equipment, the fibers are completely opened, lofty and in unprecedented optimum condition for respinning. This system is considered the "last word" by those mills to which it is suited.

One yarn mill, making a very high quality sales yarn, has for years been selling their spinner balls. They set up their material recovery system to deliver the collected fiber to the baling press. Noting the extremely good condition of the fiber, they experimented and now find it possible to reuse the ends-down waste with no adverse effects.

Ducts through Floor

In this connection, another common problem is not enough room to install collector units. With the central material recovery system, it has been possible, on occasions, to elbow down through the spinning room floor without coming outside of the head end or the foot end of the frame. In other cases, only a duct of a few inches depth need be used instead of a collector unit measuring a foot or more. While down drops through the floor generally are preferred, in many cases risers can be used, extended to ducts on the spinning room ceiling, in the event the spinning room is on the ground floor.

Where a mill is using overhead belt drives, the central material recovery system with risers is most suitable since the overhead cleaners must go around the belts anyway; usually the ducts can be run adjacent to the belts.

In summary, it can be said that problems connected with spinning ends-down collection systems present a challenge. However, the quality aspects alone—to say nothing of the very real opportunities to lower manufacturing costs—have made it worth meeting this challenge. Some of these quality aspects are improved yarn by elimination of wild or flying ends; elimination of spinning doublings by decreasing slubs, gouts, fly and end-piecings.

The elmination of the processing through a waste machine preserves the fibers intact. Normally there are no threads in the waste. Since the work runs better in the spinning room, warping and weaving quality is also increased. A cleaner spinning room reacts on the personnel to stimulate additional "job pride" and thus, cumulatively, still higher quality. ■

At Glen Raven Variety is Spice of Success

(Continued from Page 30)

WAYS AND MEANS—The key men in Glen Raven's aggressive sales effort are shown here putting their heads together to work out sales strategies for 1958. On the left is James Purdy, sales manager of the spun yarn fabric division. Second from left is R. Sidney Flood, General sales manager for all Glen Raven's divisions. Third from left is Harold Dean in charge of filament cloth sales. On the extreme right is Arthur Menke who supervises sales of tricot goods.

Alamance County. A phenomenally hard worker all his life, Roger Gant drove himself with a special degree of unsparing effort in the days when the new mill was getting built and started into production. He used to get up before five in the morning, drive from his home in Burlington the long 200 miles to Burnsville and there put in a long day's work handling the thousand and one tasks that must be dealt with when a mill is being equipped and staffed and started on its first production runs. In the evenings, he drove home the 200 miles to his own house and went, as he now says, "right to bed."

Only a man of iron constitution could have stood such a pace and only a man who pushes a car at the speeds for which the Major is famous in North Carolina could have managed the daily 400 mile round trip and a full day's work. The stories are many in and around Alamance County of the Major's awesomely fast driving. They tell the story of how one dark night when he was tooling along at a speed which was certainly close to the legal limits, to put it discreetly, his car ran smack into a tobacco farmer's mule that had mulishly taken it into his head to stand in the middle of the highway. The mule of course was pretty well disintegrated, as was the Major's car. Amazingly, the Major himself was unhurt.

He climbed out of the wrecked car and made his way to the nearest town where he promptly bought a new car exactly the duplicate of the one he had wrecked. When he reached the mill someone asked him if that was a brand new car he had. "No" said the Major, seeing no value in revealing his collision with a mule. "I had my car washed and polished yesterday over at Burnsville."

Today with their weaving, tricot and hosiery plants all as in good shape and as brightly burnished as a warship awaiting Presidential inspection, the Gants, like everyone else in the textile industry regard merchandising as their most urgent and most difficult task. Compared with the Burlingtons, the Stevens, the Dan Rivers and the Lowensteins, the Glen Raven operation is relatively modest; still by no means can it be considered small. After all, an outfit with 676 looms, 18 tricot, 76 full-fashioned and 310 circular hosiery machines—an outfit grossing $25 million a year—is a company of considerable size.

The Gants and their associates in the management of Glen Raven thus look upon the company as a "small" big or a "big" small textile manufacturer—it all depends upon the point of view. At any rate, their approach to merchandising is planned to take advantage of their "bigness" in their ability to utilize their considerable resources, and also to take advantage of their "smallness" in being able to be fast-moving, flexible, and open-minded, and thus capable of producing high style goods for converters and garment manufacturers who want "Cadillac" quality and confined "Cadillac" styling.

The word "Cadillac" with all its well-established implications of highest quality and outstanding style, is the word chosen by James P. Kinard, Glen Raven's vice president of marketing and sales, to describe the direction the company is moving in today. Kinard has been giving a lot of thought to the best ways to

GOOD THINGS COME IN LARGE PACKAGES—Up-to-date spinning equipment and techniques at Glen Raven's spinning plants provide the high quality yarns needed to weave high quality fabrics.

merchandise Glen Raven products, and he feels that the Cadillac approach is exactly right. In hosiery, for example, he points out, Glen Raven's nylons are the equal of the highest grade stockings on the market. And, he adds, they are respected as such by many store buyers. On this level, he plans in the months ahead, to promote and merchandise Glen Raven's already well-established branded nylons.

The Cadillac approach is the key also to the sales strategy of Sid Flood, Glen Raven's ebullient, always-on-the-go general sales manager. Flood functions as a stylist and industry liaison man with the converters who are extremely important in Glen Raven's sales effort for its woven goods. Outstanding quality, lively styling, a constant stream of new fabric ideas to keep the customers ordering is the basis of Flood's approach. He beams his sales efforts toward converters interested in the "Cadillac" trade: converters who want finely woven goods in advanced and original styles sold to them on a confined basis for sale in turn to the better quality high style women's apparel cutters.

In tricot, too, Kinard and Flood with the help of Arthur Menke, tricot sales manager, are looking to escape from the profitless treadmill of ordinary tricot production. They are trying to do things with warp knit goods that will make them exciting, original and irresistible to cutters. It is their hope that these new tricot constructions and style effects can be sold at the decent profit which Allen Gant quite rightly sets as a goal of Glen Raven's efforts in all departments.

The alertness to new ideas which is an important fact of the Glen Raven way of doing things has shown itself in a unflagging willingness to explore the profit possibilities of the newer fibers. As an example of this modernity, the Gants have built a special plant at Glen Raven exclusively devoted to spinning Orlon yarns on the latest high speed, long draft equipment.

The company is already well-established as a weaver, in its beautifully equipped Burnsville mill, of nylon and Dacron filament fabrics. Prominent among these are nylon-Dacron wash-and-wear suitings, and womenswear cloths for uniforms and similar utility uses. At the Glen Raven spun yarn mill, cottons, nylons, rayons and Dacron-wool blended cloths are woven side by side in a variety which impressively reveals the diversity of Glen Raven's product range.

This diversity, combined with insistence on "Cadillac" quality plus an open-minded and courageous willingness to risk money on new ventures are the key elements in Glen Raven's plans for the future. By supporting these elements with the textile skills learned in three generations of fabric making, the Gants expect to continue to prove that a small "big" operation (or a "big" small operation) can hold its own profitwise in the textile industry of tomorrow.

Man-Made Fiber Textiles

(Continued from Page 40)

TABLE VIII
ESTIMATED REQUIREMENTS OF CHEMICALS FOR SOME MAN-MADE FIBERS

	Millions of Pounds	
	Chemicals	Fiber
Acetate		250
Cotton linters	156.3	
Acetic acid / Acetic anhydride	150.0	
Sulfuric acid	12.5	
Acetone	70.0	
Acrilan		100
Acrylonitrile	85.0	
Vinyl acetate	15.0	
Dacron		150
Dimethyl terephthalate	129.0	
Ethylene glycol	46.5	
Dynel		6
Acrylonitrile	2.4	
Vinyl chloride	3.6	
Acetone	1.2	
Nylon 66		450 (estimated)
Adipic acid	279.0	
Hexamethylene diamine	249.0	
Orlon		125
Acrylonitrile	125.0	
Dimethyl formamide	25.0	
Rayon		900
Wood pulp/linters	1035.0	
Caustic soda	855.0	
Carbon disulfide	315.0	
Sulfuric acid 60°Be'	1305.0	
TOTAL	4859.5	1981

from 1950 to date, for which production or estimate figures are available, and not including important materials such as dyes and finishing agents, that the man-made fiber industry makes tremendous demands upon the chemical industry. As the textile industry continues to grow with exploitation of new and cheaper raw materials, progressively larger requirements for chemicals will follow. New industrial uses of fibers will keep pace with apparel consumption. The resulting expansion of the chemical industry will owe its success in no small measure to the developments and impetus of synthetic fibers.

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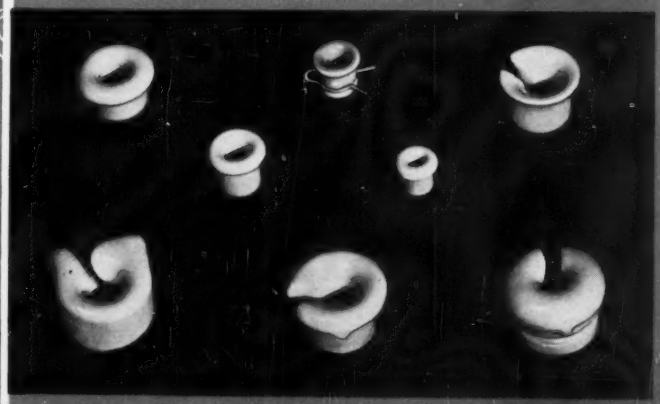
About the Authors

Mr. McFarlane is manager of the fiber research department at the Summit, N. J., research laboratories of Celanese Corp. of America. He joined Celanese in 1939 after graduation from the University of Maryland with a B.S. degree. He also studied at the Polytechnic Institute of Brooklyn. He is the author of the book "Technology of Synthetic Fibers", published by Fairchild. Mr. Caprio is head of the technical information and patent liaison department of Celanese's Newark, N. J., and Summit laboratories. A graduate of Cornell University in 1917 with a B.S. degree in Chemistry, he joined the Celluloid Co. which later became the Plastics Division of Celanese. He pioneered in the development of tricresyl phosphate in this country, and has been awarded about 25 U. S. and numerous foreign patents in many diverse fields.

MACHINERY and EQUIPMENT SECTION

MITCHELL-BISSELL THREAD GUIDES

For Every Textile Service . . . For More Than 70 Years

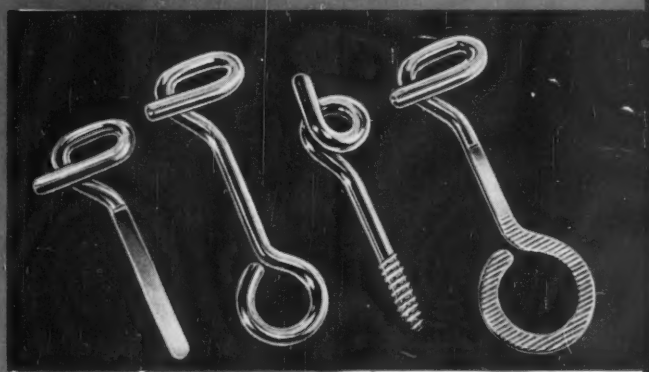


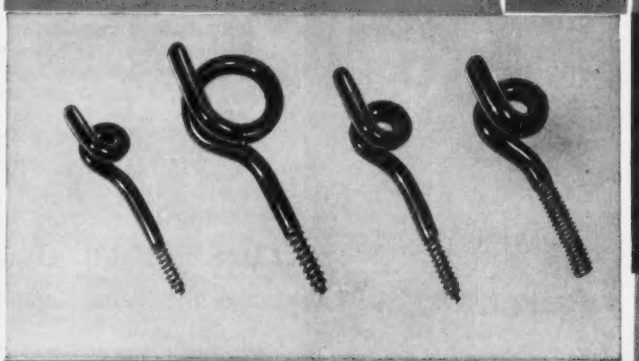
Above—"BLUE SATIN FINISH" PORCELAIN GUIDES.
An exclusive development of Mitchell-Bissell—guides with this finish are more resistant to thread wear than any glazed porcelain guides ever offered the industry. "Blue Satin Finish" Guides, instead of being shiny and glass-like, have a surface of thousands of small rounded grains closely packed together. Reduced wear and longer guide life result because, by breaking the continuity of contact between yarn and guide, friction is reduced. * U. S. Pat. No. 2,152,136.

Left—WHITE GLAZED PORCELAIN GUIDES.
The Mitchell-Bissell Company originated the use of porcelain as a thread guide for the textile industry. The white Glazed Porcelain Guides shown here are representative of thousands of patterns that have been sold to all branches of the textile industry since this company was founded over seventy years ago. Improved in quality from time to time they are still "standard."

Right—CHROMIUM PLATED STEEL GUIDES.
The plating on Mitchell-Bissell Chromium Plated Steel Guides is harder and denser than on any other wire guides. Our methods of fabricating and polishing develop a surface smoothness, with a mirror finish far beyond usual commercial standards. Because of their superior resistance to thread wear these guides are used extensively on machinery for processing rayon and nylon yarns and also for many other severe applications. Also available in Satin Finish.

Below—ENAMELED IRON GUIDES.
Where wire guides are desired, and service conditions do not require chromium-plated guides, our Enameled Iron Guides give exceptionally good service, with a low initial cost. Made with the care and craftsmanship that are standard practice on all Mitchell-Bissell products, these are recommended as centering and ballooning guides, and for cotton, woolen and other soft yarns.





MITCHELL-BISSELL CO.

TRENTON, N. J.

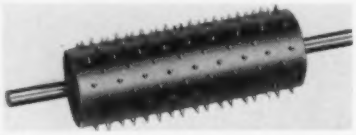
Southern Representative: R. E. L. Holt, Jr., & Associates
Greensboro, N. C.

New MACHINERY

New EQUIPMENT

Steel Pinned Cylinders

Robert A. Main & Sons, Inc., is now producing steel pinned cylinders for use in many types of perforating, punching, tearing, and picking operations. The cylinders,



which have heat-treated, pointed steel pins in many combinations of pin spacings and angles, can be repinned if necessary, according to the manufacturer. A repinning service is maintained for the firm's customers. *For further information write the editors.*

Better Shuttle Checking

Page Belting Co. offered a new "Page Check Control," designed to give better checking of the shuttle and greater pick efficiency

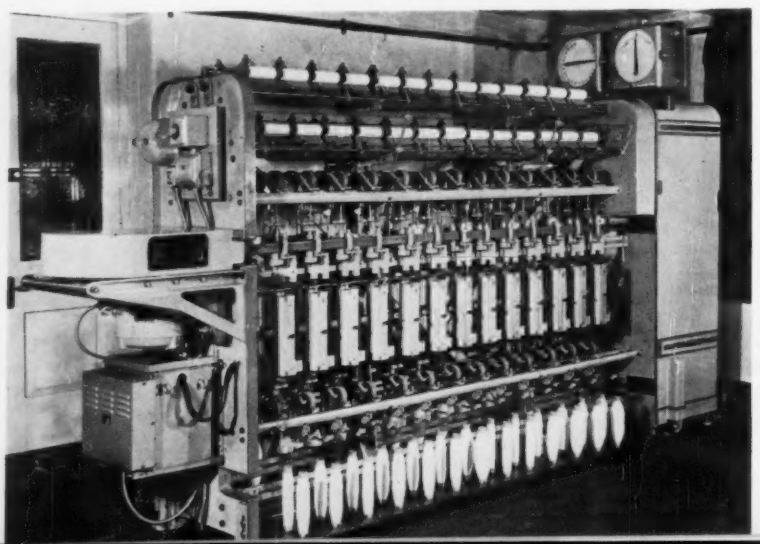
over any given period than any conventional check strap. The control, which uses a new principal of inertia checking that requires less time to install and adjust, is an assembly of hair-on leather and fabric straps sliding on a bar. *For further information write the editors.*

New Bobbin Holder

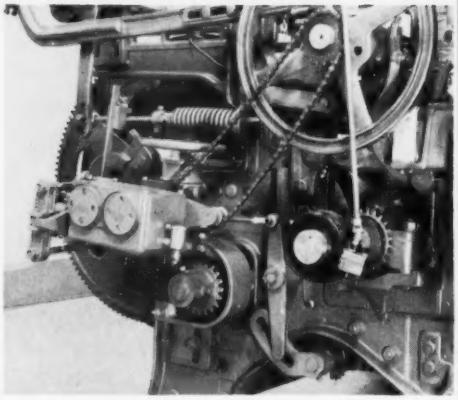
A new bobbin holder for spinning frame creels has been developed by James Hunter, Inc. It is designed to support all bobbins from 8 x 4 to 12 x 7, inclusive. The holder design is said to eliminate tripping and latching devices, while closure of the top prevents lint accumulation. Adaptable to all makes or models of creels, including wooden strip creels, the holder can be dismantled easily for repair or parts replacement. *For further information write the editors.*

Pile and Velvet Shear

Curtis & Marble Machine Co. has developed a new style shearing machine which can be adapted to high pile fabrics or velvets by simply changing the complete set of cutting parts. A numbered dial wheel controls the cutting angle, so that it is possible to make exact settings which can be duplicated at any time. Cloth speed is controlled by a variable speed transmission. The shear is safely encased in protective steel covers. *For further information write the editors.*



Scragg crimp spinning machine.



Improved Draper Let-Off

Draper Corp. has announced its Tru-Tension Let-Off which is designed to give a constant rate of yarn delivery to the loom while maintaining constant tension on the warp yarns. To accomplish this, the Let-Off has two special features; a positive and continuous drive, and a compensating friction transmission or drive-adjusting device. Draper reports the Tru-Tension Let-Off eliminates uneven or wavy cloth on various critical weaves, and is particularly useful on synthetics and fine cottons. *For further information write the editors.*

Buy Unifil Loom Winders

Burlington Industries, Inc., Starr Mills Corp. and two other textile organizations, one on cotton fabrics and the other on specialties, have purchased initial installations of Unifil Loom Winders. Universal Winding Co. reports these purchases have brought to over 3,600 units the number of Unifils installed or on order.

Slasher Room Manual

Eight specific slasher-room control systems are described in a new manual issued by The Powers Regulator Co., manufacturers of process controls. The 64-page book, "Slasher and Size Room Controls Manual," describes systems and equipment for control of temperatures of size cooking and storage kettles, size boxes, overwaxers and slashers. *For free copies write the editors.*

Crimp Spinning Machine

Ernest Scragg & Sons Ltd., has announced a new crimp spinning machine for false twist yarns. Called the Crimpsin 3, the machine features twin spinners with a total capacity of 240 spindles operating at a minimum speed of 40,000 rpm. "S" and "Z" yarns can be produced at the same time under identical, precision controlled conditions, according to the manufacturer. Perfectly straight yarn path and self-threading yarn guides are other features. *For further information write the editors.*

PAPERS OF THE
AMERICAN ASSOCIATION FOR
TEXTILE TECHNOLOGY INC.®

AATT

PLASTIC FOAMS

a new textile material

By Dr. J. Edward Lynn

FOAMS now offer the textile industry opportunities for profits and diversification. As with all opportunities foresightedness, courage, cash, and hard work will be needed before the pay-off comes. The present opportunity stems directly from two main factors: World War II research of the Armed Forces in the field of clothing efficiency; and development of foamed flexible resins without natural rubber drawbacks. The discovery that insulation efficiency depends upon retaining stagnant air cells in linings and not upon inherent fiber properties, led thinking away from the supposedly essential need for wool interlinings to a survey of appropriate clothing structures. While resin foams are a logical answer to the problem, appropriate types were not available in the early '40's; garment fabrication techniques were not developed; and we do not always proceed logically especially when ancient prejudices such as "wool and fur are supreme for cold wear", are in the way.

Another factor in the growing importance of foams is the trend to less formal clothing, coupled with the demand for more comfort in clothing suitable to a winter life of more activity, such as skiing. A strong, flexible, thin foam, durable to cleaning, readily fabricated, and resistant to the destructive forces of normal wearing is the ideal product to fill this need. Such a foam provides excellent insulation without bulk or weight.

While much of the discussion will be concerned with the insulation value of foams, foams also are valuable as resilient protective padding against injury to live and inanimate objects and are the basic materials for a variety of useful products. The gamut of products to be made will depend on our imaginations.

There are two basic types of foam cells (closed and open, or interconnecting) in three principal structural forms (rigid, semi-rigid, and flexible) made by several chemical, physical, or mechanical processes. (Table I). Flexible foams, both open and closed cell, are of most interest to the textile field. The open, interconnecting, cell material will breathe but will act as a sponge, while the closed cell will be uncomfortable to wear unless about 1/16 inch holes are punched to the extent of about 10-15 percent of the surface area. The closed cell type is an effective floatation aid of value in hunters' clothing and over water survival cold weather gear. The flexible foams are usually in the 1.5-10.0 lbs. per cu. ft. range.

For textile use the foaming resins of most interest are Neoprene, vinyl chloride, modified vinyl chloride, and urethanes. The Neoprene and vinyl chlorides are compounded with plasticizers, stabilizers, and vulcanizers and are normally expanded by using blowing agents which release nitrogen gas; the urethanes depend upon a chemical reaction between the isocyanate and water to release carbon dioxide which causes the foaming. A comparison of three representative foams in respect to many properties of textile interest is given in Table II. Some of the information presented is based on research being conducted at the U. S. Naval Clothing and Textile Office.

Dr. J. Edward Lynn

Dr. Lynn received his degree of Sc.D. from Massachusetts Institute of Technology in chemical engineering specializing in colloid chemistry. From 1942 to 1952 he directed the development of textile resin finishes and surface active agents at American Cyanamid Co., and later served as director of basic research at National Gypsum Co. He is now an independent consultant to the textile and allied industries. Dr. Lynn has written extensively on colloid chemistry and textile finishing.

Papers presented at Dec. 4th meeting.

TABLE I
COMMON METHODS OF PRODUCING FOAMS

Process	Mechanism or Chemical Used	Typical Examples
1. Compressed Gas Infusion	O_2, N_2, air, steam	Latex Sponge
2. Mechanical Beating	Air alone or with foam stabilizers	Urea Formaldehyde
3. Heating	a) Volatile Solvent Evaporation	Cellulose Acetate
	b) Heat Reactive Chemicals	Latex Foam
	c) Chemical Decomposition with Gas Evolution (Usually N_2)	Blowing Agents
	d) Heat Expandable Polymers	Polystyrene
	e) Explosive Release of Steam	Cellulose Board, Puffed Cereal
4. Chemical Reactions	a) Condensation Polymerization Releasing Mainly CO_2, NH_3, Steam	Phenol Formaldehyde
	b) Water Reacting with Isocyanate	Urethanes
	c) Acids plus Carbonates	Latex, Bakery Products
	d) Dissolving out Solid Crystals	Cellulose Sponges

In general, the vinyl type foams, are produced by resin and plastic manufacturers and are supplied in finished form to the textile manufacturer. While textile urethane foams, can be supplied by resin manufacturers and compounders, urethane foams can also be made by textile mills.

The fact that urethane foams can be produced, either in molds or in place on cloth, by textile mills is a fourth factor which has produced the present great interest in foams for textile use. Not only are

CUTTING TO WANTED SHAPES AND SIZES—A slab of plastic foam at rear left moves down the conveyor to be cut off like the long section in the foreground. After curing, it will be shifted to the slitter (center) and then trimmed to sheets of required size.

TABLE II
COMPARISON OF PROPERTIES OF 3 FLEXIBLE FOAMS OFFERED FOR APPAREL USE

Property	Urethane*	Modified Vinyl Chloride**	Neoprene Rubber***
Density (lbs/cu. ft.)	2.5	5	12.5
Cell type	Open	Closed	Closed
Water pickup (%)	1500	0	0
Compression Set			
at 30 min. (%)	40	85	80
at 24 hrs. "	15	80	60
at 240 hrs. "	12	75	12
Flammability			
Flame present	Readily	Moderate	Readily
Flame removed	None	None	Cont. to burn
Durability to Heat			
120 hrs. at 160°F.	Yellowed	Stiffened	O.K.
1 hr. at 280°F.	Yellowed	Stiff., shrank 15%	Sl. stiff., shrank 2%
Autoclave 15 min. at 250°F.	O.K.	Collapsed, shrank	Sl. stiff., shrank
Washability† 3 cycles	O.K.	O.K.	O.K.
Dry Cleanability†† 3 cycles	O.K.	Stiff. & shrank	O.K.
Weathering—Roof Exposure & Weather-Ometer	Yellowed	Stiffened, lost strength	Sl. stiff
Cold stiff. temp. (°F.)	10	—10	—30
180° bend over ½" bar at —65°F.	O.K.	O.K.	O.K.
Sewing & Seaming	O.K.	Difficult, some needle cutting, need bias binding	Like the modified vinyl
Tear strength	High	Low	Low
Abrasion resistance	High	Low	Very low

* Urethane formula similar to Table IV poured into mold, expanded 30 fold to 10 inch slab, cured, sliced.
** Vinyl chloride modified with butadiene-acrylonitrile is compounded with plasticizers, stabilizers, and vulcanizers, expanded by N_2 from blowing agents, cured in slab, cored with 1/16" holes giving 10-15% voids for breathing, sliced.
*** Neoprene rubber compounded with plasticizers, stabilizers, and vulcanizers, expanded by N_2 from blowing agent and cured in a small mold, released to expand, recured in a larger mold, sliced.
† Washing according to Test 5556 of Fed. Spec. CCC-T-191b.
†† Dry cleaning according to Test 5508 of Fed. Spec. CCC-T-191b.

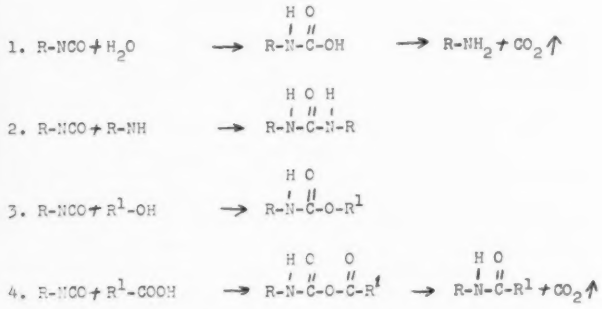
there prospects of making new salable textile items, but there are also many possibilities of diversifying into other resin foam fields.

The essential ingredients for a urethane foam are a diisocyanate, a compound with a reactive hydrogen, and a catalyst. The diisocyanate has an aromatic nucleus because aliphatic diisocyanates are too costly, too slow reacting, and too toxic. The main diisocyanate is an 80:20 mixture of 2-4:2-6 toluene diisocyanate isomers.

For foam production, the main reactive hydrogen compound is water (see Table III) and the catalyst

TABLE III

ISOCYANATE REACTIONS OF INTEREST IN FOAMING



is usually a tertiary amine. Because a water-diisocyanate foam is too brittle, a second reactive hydrogen product—a preformed resin—is used to give toughness. The present preferred resins are low acid number polyesters (adipic acid-ethylene gycols or dimer acid-glycols) of about 2,000 molecular weight or polyether condensates, both with high hydroxyl numbers.

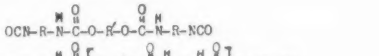
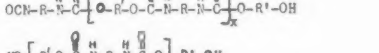
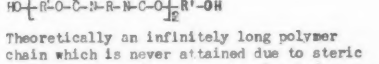
Flexible foams require difunctional polyesters or polyethers, while rigid foams incorporate large percentages of tri-or tetra-functional resins. The semi-rigid foams are like the rigid but have extra diisocyanate and water to give more foam and lower densities (1.5 to 2.5 lbs./cu. ft. compared to the rigid foam 15-30 lbs./cu. ft.). For better shock resistance and less bottoming, flexible foams also may contain small amounts of polyfunctional resins.

Urethane foams can be made by a "one-shot" or by a "prepolymer" process. In the one-shot process, the resin, foaming agents, catalyst, and water are mixed thoroughly and the diisocyanate added with extremely rapid and thorough mixing. Rapidity is essential because foaming starts within 15 seconds of the adding of the diisocyanate. A typical formula is shown in Table IV.

In the prepolymer process, the resin and the diisocyanate are reacted (Table V) for 2-6 hours at 200°F.

TABLE V

REACTIONS OF FOAMING OCN-R-NCO AND HO-R'-OH

Molar Ratios		Main Product
-NCO	-OH	
1	0.4	
1	1.0	
1	4.0	
1	11.0	Theoretically an infinitely long polymer chain which is never attained due to steric forces and branching through amine hydrogens.

in a dry air or dry nitrogen atmosphere to prevent diisocyanate reaction with moist air. Since the diisocyanate is in molar excess, the terminal reaction groups will be isocyanate, readily available to react with water and to liberate gaseous carbon dioxide. The foaming agent, catalyst, and water are mixed together. This mix is then stirred rapidly with the correct amount of prepolymer which is kept at 160-180°F. to maintain a pouring viscosity of 4,000-8,000 centipoises. Foaming commences in 10-20 seconds after mixing. With polyether, the prepolymer formation requires some intermediate diisocyanate additions to slow down the reaction. As with vinyls, urethane foams can be made with blowing agents and not by CO_2 release.

One-shot foams can have as high as 60-90% closed cells, while prepolymer foams are normally open cells. With correct formulation, cell size is uniform and normally tiny. Moisture must be excluded from all ingredients and all equipment in both processes. Adequate ventilation is necessary and protective clothing must be worn because diisocyanates are reactive with skin and lung tissues.

Textile users may buy either unreacted diisocyanates and resins; specified two-component prepolymer and catalyst mixes; or foamed material slit to specified thicknesses and shapes. A comparison of prices of some available foams is shown in Table VI and the cost of the raw materials for one polyester and polyether composition urethane is shown in Table V.

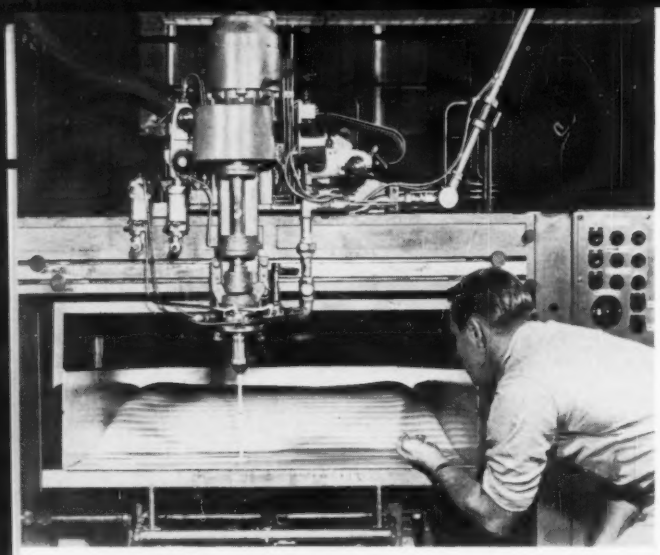
Polyethers are in the range of 25-33 cents/lb. compared with the 50-70 cents/lb. polyester range. How-

TABLE IV

TYPICAL FLEXIBLE URETHANE FOAM COMPOSITION RAW MATERIAL COSTS

Ingredient	Parts by Weight	Present Prices			Predicted 1960 Prices		
		Ingredient Cents/Lb.	Formula* Cents/Lb.	Cents/Lb.	Ingredient Cents/Lb.	Formula* Cents/Lb.	Cents/Lb.
Polyester (low acid)	70.0	50-70	42.0	—	40	28.0	—
Polyether	70.0	25-33	—	20.3	25	—	17.5
Toluene diisocyanate	30.0	70-100	25.0	25.0	50-60	16.5	16.5
Foaming agent	0.7	35-55	0.3	0.3	35-55	0.3	0.3
Tertiary amine catalyst	1.0	45-75	0.6	0.6	40-50	0.6	0.6
Water	3.0	—	—	—	—	—	—
Median Price/lb. (cents)			68.0	46.2		45.4	34.9

* Using Median Cost Figure.



FROM LIQUID TO SOLID—Here a mixing head is shown as it moves across the mold, pouring out liquid urethane foam. Directly behind the liquid ribbon, the foam has already begun to expand.

TABLE VI
PRICES PER SQUARE FOOT OF SOME AVAILABLE FOAMS

Foam	Polyester Urethane	Vinyl	Modified Vinyl Chloride	Styrofoam Rigid	Foam Rubber
Density (#/cu. ft.)	2	7	7	1.5	8
Cell Type	Open	Open	Closed	Closed	Open
⅛" thick (cents)	4.8-6.2	10	12-18	—	—
1" thick (cents)	29-39	56	90-110	19	80-100

ever, the extra heating, labor, and diisocyanate involved in polyether prepolymer making offsets some of this differential and the softer, possibly soggy, nature of an ether-urethane foam does not allow indiscriminate interchange of the two types. Dimer-acid polyester types are more expensive but equivalent properties are claimed at a 20% decrease in density (2.2 vs 1.8 lbs./cu. ft.) allowing this type to be competitive.

Polyesters, generally, are stiffer than polyether foams with more resilience, or bounce. They have slightly lower densities.

In addition to the effect of varied hydroxyl and isocyanate ratios (Table V), the bubble size and uniformity and the polymer molecular weight will depend on the type catalyst and polyhydroxy compound used and on the reaction temperature.

The major fault of urethane polyester foams is a degradation during accelerated aging at temperatures above 160°F. at high humidity. Strength properties drop drastically and the foam may disintegrate. Amine catalyst left in the foam seems to be the main instigator of the deterioration, but the other ingredients can contribute to the problem (Table VII). With sensibly formulated polyester foams this accelerated aging deterioration does not occur under normal use conditions. Polyether urethane foams show much greater resistance to accelerated aging deterioration and no normal use condition degradation.

Urethane foams have about as ideal properties for textile use as is possible, ranging from resistance to chemicals and mechanical action to ready fabrication in normal clothing manufacturing operations. While friction across the sewing table is high, encasing in a light fabric will eliminate this friction.

TABLE VII
EFFECT OF FORMULA VARIATIONS ON HIGH TEMPERATURE—HIGH HUMIDITY AGING OF URETHANE FOAMS

Ingredient Increased	Degradation Effect	Comments
H_2O	More	—
Catalyst	"	Depending upon catalyst volatility plus cure time and temperature.
Higher polyester acid number	"	Acid ties up catalyst to a less volatile salt.
NCO	Less	—
Surfactant up to 1 part	"	—
Add crosslinking agent	"	but less flexibility.
Heat during blowing	Variable	Mainly depends on polyester used and its temperature-viscosity curve.
Adding zinc oxide	More	—
Adding certain rubber accelerator	Less	(about 5-10%)
Adding waxes	"	Probably makes water repellent.

It is estimated that more than 1,000,000 square yards of 1/16 to 1/8 inch interlining urethane foam will be used during 1957. This yardage is predicted to increase to 15,000,000 by 1960. Such an increase in garment insulation use of urethane is not unexpected when it is realized that a 3/32 inch, 3 oz. per sq. yd., sheet of urethane foam interlining has the same insulation value as 14-16 oz. per sq. yd. wool. (See Table VIII). The urethane does not require quilting unless desired for esthetic appeal nor will it mat, bunch, or lose efficiency on laundering or through wear attrition.

TABLE VIII
THERMAL CONDUCTIVITIES OF REPRESENTATIVE INSULATING MATERIALS

Material	Density #/cu. ft.	Thermal Conductivity Btu/hr./sq. ft./(°F/ft.) 75°F	200°F
Cork	8-10	0.025	0.032
Balsa	7-8	0.025	—
Wool	7	0.021	0.033
Rock Wool	12	0.022	0.034
Glass Wool	4-10	0.024	—
Styrofoam	1.5	0.023	—
Urethane Foam	2	0.017	0.025

For textile uses other than interlinings plus non-textile uses, about 4 million pounds of flexible foams were produced in 1955; 10 million, in 1956; 28 million, in 1957; and by 1960, 100 million pounds per year are predicted. Rigid urethane foam should have an equivalent rise from about 5 million pounds in 1955 to 70 million pounds in 1960.

Foams, especially urethane foams, have a bright present and a better future as textile materials, but this can all be destroyed by shortsighted opportunists. Already have appeared which are inadequate to perform their claimed functions. Diisocyanate concentrations have been decreased to dangerous levels. A 1.5 lb. cu. ft., 1/16 inch, foam designed as an interlining for a woman's suit has been sold, and failed, as a durable carpet underlay.

As was the case with plastic toys, consumer dissatisfaction can ruin a potentially profitable range of products. It is not too early to establish industry standards to protect this promising development. ■

EXPANDED VINYLS
in special purpose garments

By Thomas G. Tompkins

SHORTLY AFTER hostilities began in Korea, it was found that the climate was as dangerous an enemy to our troops as the North Koreans. The weather was bad—both cold and wet—and conventional garments were soaking up moisture and losing their insulating value.

The U.S. Quartermaster Corps. called on U.S. Rubber Co. to develop a suit which would retain its insulation value in Korea's wet, cold climate. We did just that and supplied thousands of these suits to the military. The civilian version of the material used in Korea, further developed of course, is U.S. Ensolite, a modified expanded closed cell vinyl material.

We have felt for some time that weight has little to do with warmth in garments because the insulator is not the vinyl or urethane or polyester fiber or wool, as the case may be, but the air spaces formed within the structure of these materials. The property of light weight is a desirable one to all persons, but obviously it is most desirable to the man or woman who will be wearing an outer garment for long periods at a time.

The property of light weight, while inherent in U.S. Ensolite, is not peculiar to it. Other materials have this advantage in varying degrees. In addition to light weight, other advantages may be found in expanded closed cell vinyls. Among these are non-absorbency, buoyancy, and low K factor.

In order to use these properties, we have had to find the specific markets in which most of them are important to the wearer. The average office or factory worker, for instance, who drives his car to work, has little use for extended warmth provided by the non-absorption feature, nor will he find buoyancy important in a garment. The outdoorsman, on the other hand, finds very definite use for both these properties. Members of hunting parties have told us that, in their U.S. Ensolite lined garments, they were the only ones in the group who remained comfortably warm. Buoyancy is important to the outdoorsman because he is very often confronted with water hazards of one kind or another.

Thomas G. Tompkins

Mr. Tompkins is a sales representative of U. S. Rubber Co. working with garment manufacturers on the company's products. He holds a B. S. degree in finance from Indiana University and during the war served with the U. S. Air Force.

Hunters, fishermen, and outdoorsmen of all kinds fall into the broad category of "those who want to be out of doors in foul weather whether they have to or not". Another category is "those who have to be out of doors in foul weather whether they want to or not". This group includes policemen, firemen, dock workers, forest rangers and members of many branches of the military. Most of the people in this group have been wearing garments weighing up to 54 ounces per square yard—30 ounces of outer shell and 24 of interlining.

With U.S. Ensolite interlinings, it is possible to cut the weight in the outer shell about 10 ounces and the interlining about 18 ounces so that the overall weight of the garment is cut by more than 50%. This decrease in weight is necessary because of the number of hours per day the garments are worn. We have all seen older traffic policemen who have rounded shoulders, but few of us have seen a man such as this whose shoulders are still square. The heavy clothing he has worn for years is primarily responsible for his rounded shoulders.

If we are to decrease the weight of the policemen's reefer coat, we must make sure he has protection equal to or better than what he had in the heavy bulky garment. This calls for an insulating lining which retains its insulating value during prolonged exposure to cold, wet weather. This requirement is met by a closed cell material such as U.S. Ensolite better than it can be met by any other type of cellular or fibrous material as they all absorb some amount of water.

As a closed cell material has certain advantages over other interlinings in certain applications, it is true that others have advantages in some of the fields we have not discussed. This leads us to believe that there is a place for most of the foams or expanded plastics now being produced for and by the textile industry.

As has been the case with urethane foams and foam and sponge rubbers, we have, by altering our compounding, produced materials which fill completely different requirements from those filled by the product lining some of the garments now available commercially. One of these requirements is shock absorption. Engineers in this field have told us that only deep soft mud has better energy absorption properties than shock absorbing U.S. Ensolite. As you would guess this material is currently being used in automobile safety devices and in many applications in the athletic field such as shoulder pads, thigh pads, football helmets, and boxing and wrestling mats.

The ability to design compounds to meet specific requirements gives the manufacturer of synthetic textiles an advantage and a challenge. He can now produce products for specific parts of the industry. A

(Continued on Page 56)

Urethane in clothing — warmth without weight

By Richard A. Singer

URETHANE FOAM is a foamed plastic derived from polyester and polyether resins. Earlier foams were all of the polyester variety, but the new polyether types have become important during the past year, because of their greater resiliency and softness. It is now simply a matter of choice as to which type should be adapted to your specific applications.

Urethane foam can be made with a wide range of properties that fall ito flexible, rigid, or semi-rigid categories. The foams can have either open or closed cells with densities ranging from less than one to over 65 pounds per cubic foot. The material is also offered as a foamed-in-place system, such as the Lockfoams which are produced by the Nopco Chemical Co. Lockfoam is sold as two liquids which can be pumped directly into semi-automatic or fully automatic mixing equipment. It is poured as a fluid into complex configurations where chemical reactions expands the ingredients to 30 times its original liquid volume and forms a self-adhered foam.

For textile applications, however, the manufacture of urethane foam slabs starts with an intense mixing of its several components. As the mixing head moves transversely over the width of the mold, the viscous, free-flowing liquid is discharged. Almost immediately the liquid begins to foam, increasing in volume, until it reaches the top of its rise where it will "set." Density and cell size are pre-determined by the formulation. Coloring may be added to the foaming mixture so that it is part of the foam and will not bleed or crock.

Since a conveyer is now used, the foam can be made in continuous lengths, restricted only by space and materials handling. Generally the practical cut off length is 60 or 70 feet. After the foam slab has been cured (either self cure for 24 hours or oven cure) it is placed on a fast moving slitter where it is trimmed to sheets as thin as 1/16". In cases where rolls of 50 or 60 yard length are desired, it is necessary to incorporate an additional step. The slab is reduced to ¾" or 1" rolls which are butt-jointed and then slit to thinner gauges.

Richard A. Singer

Mr. Singer is assistant sales manager of flexible foams at the North Arlington Plastics Division of Nopco Chemical Co. A graduate of the University of Maine, Mr. Singer came to Nopco two years ago after earlier experience with American Latex Fiber Corp. and Farnsworth Fiber Corp. His background also includes a period of service with Forge Mills and United Merchants & Manufacturers.

More Warmth with Less Weight

Let us first look at warmth retention which is the basic reason why interlined insulation is used. An ⅛" thickness of urethane foam that weighs only 3 ounces per square yard is comparable to a 12-14 ounce conventional wool batting. We can readily see that a jacket interlined with wool batting could weigh as much as two pounds more than a similar product using urethane foam. If you will inspect a sample of urethane foam, you will see that it is composed of millions of tiny air cells—the secret of its effectiveness as an insulating material. Since air is a notoriously poor conductor of heat, the trapped air in the foam cells slows down the loss of body heat to the atmosphere.

Effect of Cleaning on Warmth Retention

Not only will urethane foam withstand repeated washing or dry cleaning without suffering harmful effects, but unlike wool interlinings it will not mat or shrink. This insures uniform insulation over the entire area insulated by the foam. Recently the Du Pont Elastomers Division conducted wear tests of garment interlinings at Kingston, Ontario. Fifteen milkmen, on their regular routes during February and March of this year, wore jackets that were identical except for the interlining. These garments were dry-cleaned or machine-washed and machine-dried once weekly for a period of seven weeks. The washing and drying caused separation and pilling of the reprocessed wool interlinings and left no insulation in some spots. On the other hand, the unquilted urethane foam interlinings were unharmed.

SOLVENT RESISTANCE OF URETHANE FOAMS

Solvent	*Wet Tear Strength, lb./in.*	*Swelling*
Linseed Oil	1.6	Slight
Turpentine	1.1	Slight
Ether	1.2	Slight
Gasoline	0.9	Slight
Mineral Oil	1.0	Slight
Benzene	0.4	Heavy
Chlorobenzene	0.2	Heavy
Carbon Tetrachloride	0.5	Heavy
Ethyl Acetate	0.2	Heavy
Acetone	0.5	Heavy
Ethyl Alcohol	0.3	Heavy
None (control)	2.0	—

Solvent Resistance

Urethane foams have excellent resistance to a wide variety of solvents and oils. The Mobay Chemical Co. has conducted extensive tests where samples of urethane foam were immersed in various solvents

for 50 days at room temperature. Tear strengths were measured at the end of that time on the wet foams, and are recorded in the above table, along with an indication of the degree of swelling. However, after 24 hours drying at 100° F, the original tear strengths were regained.

Chemical Resistance

Urethane foam has moderate resistance to dilute acids and alkalies, and excellent resistance to water, salt, and soap solution. To illustrate this, the following table shows storage test data on a 3 lb./cu. ft. foam. Tests were performed in the same way as was described for the solvent resistance tests. Again normal tear strengths were restored after drying for 24 hours at 100°F.

CHEMICAL RESISTANCE OF URETHANE FOAMS

Solution	Exposure Time Days	Wet Tear Strength 16/in.	Swelling
Water	50	1.3	None
Salt, 10%	50	1.3	None
Sea Water	50	1.2	None
Detergent	50	1.4	None
Soap	50	1.4	None
Sodium Carbonate	50	1.7	None
Nitric Acid, 10%	1	—	Destroyed
Sodium Hydroxide, 10%	1	—	Destroyed
None (control)	—	2.0	—

Hydrolysis Resistance

Properly formulated isocyanate foams show good resistance to hydrolysis, even at elevated temperatures. Data in the following table show typical resistance to boiling water:

EFFECT OF BOILING WATER ON URETHANE FOAMS

Foam Density lb./cu. ft.	Cell Size	Time of Exposure 5 Hr.	30 Hr.
3	large	No effect	Signs of attack
4	small	/Signs of attack	

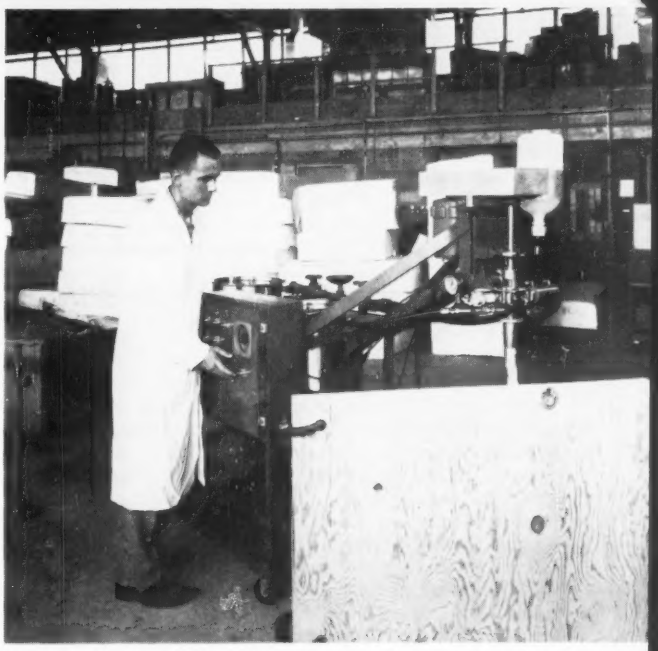
Similar tests have been performed, using steam at 212°F.

EFFECT OF STEAM ON URETHANE FOAMS

Foam Density lb./cu. ft.	Cell Size	Time of Exposure 8 Hr.	16 Hr.	24 Hr.
3.1	large	—	—	Very little attack
3.5	medium	—	—	Slightly tacky
4.3	small		Tacky	

Tensile & Elongation

Tensile strengths of urethane foams are considerably higher than garneted batts used in interlining. This allows thin sheets of foam to be used in many unsupported applications, not found feasible for existing materials. Examples are unquilted foam cut to pattern and sewn into garments as panels; another example is integrated upholstery in which the foam is laminated to the fabric. Quality-control tests conducted in Nopco's physical testing laboratories indicate average tensile strength to be 23 lb./in^2 and tensile elongation to average over 600%.



MIXES, MEASURES & POURS—This machine developed and leased to users by Nopco Chemical Co., automatically meters, mixes and dispenses urethane foams for mass production. It can deliver large or small units of urethane foam of any density at varying rates up to 15 pounds a minute.

Tear Strength

Tear strength of urethane foams, like tensile strength, is outstanding and range between 3.5 to 5.3 lb./in. The foams can be sewn without fear of the stitches being pulled out upon stretching. This high tear strength allows uncovered urethane foam to be used as automotive head liners and padded sun visors.

Flammability

In general, urethane foams, when properly formulated can be classed as self-extinguishing.

To summarize, urethane foam is a lightweight porous, insulating material that is warm, drapeable, and strong. It is nontoxic, durable, and moth and mildew-proof. It is easily cleaned and easily manu-

END PRODUCT—This parka with a urethane foam interlining for warmth, retains its shape through many washings.

factured. In fact, urethane foam is tailored to the manufacturer's requirements. It is available in various thicknesses by the yard and in several colors. It does not require special handling but is easily fabricated because it can be:

1. Cut with hand or power scissors
2. Hot wire or die cut; sliced or sawed
3. Sewn, glued, or heat-sealed
4. Quilted, flocked, embossed, or silk-screened

Applications

When urethane foam was introduced two years ago, the reaction of the clothing manufacturer was a positive one. He wanted to know what is new about it and how it will improve his product. Since new materials and styles are an important mainspring of the clothing industry, a few leading manufacturers were quick to introduce new lines incorporating urethane foam. Interest in urethane foams has now mushroomed so that a great future is in store for its applications in the apparel industry.

Its unusual properties are striking evidence of a really different material. One might say that the former "new look" has been reincarnated as the "new feel" in textiles— the feel of warmth without weight, in addition to the trim styling afforded by urethane's lack of bulk.

This feature makes urethane foam advantageous for ladies' apparel; designers can now fashion weathertight garments with flattering lines: rainwear, car coats, ski togs, swim suits, and under sportswear. A lining to be zippered in or out, this springy material is soft and pliable but always maintains its shape. Discriminating women will also welcome a porous interlining that resists odor and that breathes to permit the evaporation of moisture.

For children, urethane foam offers clothing that is not only warm, but that allows for free movement. Remember that urethane foam has the warmth of wool at less than one-fifth its weight. The bulky snowsuit or surcoat that has been heartily resented by children becomes a lightweight outfit to be worn in comfort. Garments can be plunged into home washers and driers; their linings will not shrink, or mat into lumps. They are also unaffected by ironing or pressing temperatures.

The manufacturers of men's wear also appreciate the advantages of breatheability, retention of shape, and freedom of action. In addition to the use of urethane foam for men's rainwear and underalls, the new product is pushing a new line of men's sportswear into big-league competition. The lining is being used in hunting jackets and trousers, parkas, swim suits, and colorful sports caps.

It is an innovation in sleeping bags that can withstand repeated rolling and unrolling and it can be quilted into warm, featherweight comforters. It can be utilized for shoulder pads, pants' gripper pads, and sock linings. Another inevitable application for this insulation is in flying suits, where it is now being considered for use by the Navy and Air Force.

Another factor to be taken into account is that the addition of urethane foam does not increase the price of the garment. It is competitive, on a price performance basis, with conventional interlinings, such as wool batting, polyester, acrylic and glass fiber linings.

Expanded Vinyls

(Continued from Page 53)

hunting coat, for example requires a completely different type of outer shell and insulation from a casual garment. Warmth over an extended period of time and inherent buoyancy are important considerations for the hunter while style, hand, and drape are more important to the wearer of a casual garment. By taking advantage of the properties of various compounds of various foams, the garment manufacturer can produce better garments. By producing textiles which have the specific properties necessary to particular parts of the textile industry, the textile manufacturer can help the industry to grow and to prosper as it should.

Europe

(Continued from Page 36)

Germans for Design Protection—Representatives of Japan's Textile Design Protection Center met with German textile men in Frankfurt and convinced them that uniform laws to protect designs are needed. The Germans suggested that some European center for design laws and patents be set up.

Norwegian Labor Accepts 3rd Shift—Norwegian textile employers and workers agreed that, in interest of better utilization of costly equipment, operations be conducted on three-shift per day basis instead of the two-shifts now in force in about 25% of Norway's mills.

French Textiles Brisk—The French economy has generally been having a rough time of it, but textiles are booming. Output in 1957 was expected to be some 12% over 1956. This occurred at a time when shipments to U. S. were down over 14% but were compensated for in West Europe, the French overseas territories and at home. Exports to Italy were 62% higher. Rayon staple fiber output, which had dropped 12.3% in 1956, moved ahead 30% in 1957.

German Rayon Output Off—Declining production of German rayon staple (viscose, acetate and cuprammonium) is expected to have pulled down the country's overall rayon and man-made fiber output below 1956. True man-made staple and filament output rose to 5,000 metric tons during the third quarter of 1957, against 4,700 tons in the second period and 4,100 in the first. The drop in rayon staple output is laid to Japanese competition for foreign markets.

British Research Gains—The British Cotton Industry Research Association is studying blends of Tanguis cotton and 3-denier, 1½-inch staple nylon. Work is also underway on similar blends with Fibro, Tricel, Terylene and Celon. . . .Courtauld's new million dollar research unit, recently inaugurated in Manchester, will be open for use by the entire British textile industry. Included in equipment are Saco-Lowell cotton and man-made staple fiber processing machinery and Whitin spinning equipment for blends of longer synthetic staple fibers with wool.

Big Celanese Promotion

Celanese "World of Ideas" decorative fabrics promotion is reported to have resulted in brisk sales this Fall in drapery and home furnishings stores. The promotion has used an unprecedented number of window displays, which have been backed up by newspaper ads and spot radio and television commercials.

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in December 1957. All prices are given as subject to change without notice.

RAYON FILAMENT YARN

American Bemberg

Current Prices

Regular Production Reel Spun Yarn

Den/Fil	No Turn Skeins	Turned* Skeins & Cones	8½ Turns	High Turn Skeins & Cones 12 Turns	15 Turns	18 Turns
40/30	$1.49	$1.95	....	....	....	$2.08
50/36	1.24	1.50	....	....	....	1.80
65/45	1.14	1.30	....	$1.53	....	1.58
75/60**	1.04	1.18	....	1.41	$1.46	1.49
100/74**	.95	1.08	....	1.33	1.38	1.44
125/60	.94	1.05	$1.09	1.30	....	....
150/120	.93	1.02	1.12	1.27	....	....
300/225	....	.95	....	....	1.08	....

* Turn includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.
** Spun Dyed Cupracolor Black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den/Fil	No Turn Tubes	No Turn Beams	5 Turn Beams	5 Turn Cones	12 Turn Beams	12 Turn Cones	15 Turn Cones
40/30	$1.35	$1.35	....	....	....	....	....
50/36	1.00	1.00	....	....	....	....	....
65/45	1.05	....	....	....	....	$1.42	....
75/45*	.97	....	$1.08	$1.08	$1.31	1.31	$1.39
100/60*	.89	....	1.03	1.03	1.23	1.23	1.31
125/60	.84	....	.99	.99	....	....	....
150/90*	.77	....	.81	.81	1.15	1.15	1.24
150/120	.81	....	....	.93	....	....	....

* Available also in Spun Dyed Cupracolor Black at 15¢ per lb. extra.

Nub-Lite (Short Nubbi)

Code	Den/Fil	2½ Turn Natural Cones	2½ Turn Cones*	5 Turn Natural Cones	5 Turn Cones*
1515	160/90	....	....	$1.45	$1.35
1519**	155/90	....	....	1.45	1.35
2008	200/120			1.06	.96
3002	315/180	$1.10	$1.00	....	....
4011	410/224	1.10	1.00	....	....
6001	600/360	1.08	.98	....	....
8001	860/450	1.08	.98	....	....

* Basic price for cones when dyed. Dyed Colors 30 and 35 cents above basic price. Prices based on 200 lb. dyed lots only. Prices for natural yarn skeins same as natural cone prices.
** Code 1515 can be run in warp or filling.

CUPIONI Type B

Code	Den/Fil	No Turn Skeins	2½ Turn Cones	5 Turn Cones
9610	50/30	$1.39	....	$2.14
9650	70/45	1.29	$1.64	....
9660	100/60	....	1.48	....
1545	150/90	....	1.25	....
9720	200/120	....	1.20	....
9730	285/135	....	1.10	....
9792	450/225	....	1.10	....
9814	600/372	....	1.07	....
9837	940/372	....	.97	....

"Spun Dyed Cupracolor is spun 150, 285, and 940 deniers at 35¢ per pound extra. Cupracolor Black comes in all deniers."

STRATA SLUB

Code	Den/Fil	Turned Cones	Price
9747	275/225	3½	1.20
9798	450/372	2½	1.10
9823	600/372	2½	1.05
9847	960/372	2½	.97
9885	1290/372	1½	.95
9934	2680/744	1½	.95

"Spun Dyed Cupracolor is spun in 600 and 960 deniers at 35¢ per pound extra."

FLAIKONA

Code	Den/Fil	Turned Cones	Price
9669	150/148	2½	$1.35
9769	300/224	3½	1.40
9807	600/405	2½	1.20
9840	900/450	2½	1.10

"Spun Dyed Cupracolor Black 35¢ per pound extra."

Terms: Net 30 days, F. O. B. shipping point. Minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight allowed to Memphis, Tennessee. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F. O. B. delivery point.

American Enka Corp.

Current Prices
Effective December 4, 1956
Standard Quality Yarns

Standard Quality Rayon Yarns

A. Natural

Den./Fil.	Luster	Turns	Skeins: Weaving Cones	Beams	Long	Short	Cakes	Knitting Cones
50/18	E	5 S						1.56
50/20	B	2.5 S&Z					1.45	
75/10	B	3 S&Z					1.08	
75/18	E	4 S						1.22
75/30	B	2.5,4S&Z	1.17	1.17			1.08	1.17
75/30	B	8 S	1.22			1.37		1.22
75/45	P,E	2.5, 4,5S&Z	1.17	1.17	1.23	1.37	1.08	1.17
75/60	B,P	3,4 Z	1.22				1.10	1.22
100/14	B,P	3 S&Z				1.12	.96	
100/40	B,E	12 S						1.27
100/40	B,P,E	4,5 S&Z					.96	1.04
100/40	B	6 S	1.10					
100/40,60	B,P	2.5,4S&Z	1.04	1.04	1.08	1.12	.96	1.04
100/60	E	2.5 S	1.06	1.06			.98	
125/40	E	3 Z						.96
150/40	B,P,E	2.1,3S&Z	.91	.91	.94	.99	.86	.90
150/40	B,E	5 S&Z	.91		.94	.99	.86	
150/40	B,E	8 S&Z	.97		1.00	1.05		
150/40	B,P	10 S&Z	1.03	1.03				
150/90	B,E	2.1 S&Z	.92	.92			.87	
200/40	P	3 Z						.82
200/40	B,P	8 S				.95		
250/60	P,E	2.4 Z						.75
300/50	B,E	3 S	.73	.73				
300/60,120	B,P,E	2.1 S&Z	.73	.73		.76	.71	.73
300/60	B	3.5 S	.73	.73		.76	.71	
300/60	B	4.3 S	.76	.76			.74	
300/60	F	7 S	.83					
300/40,120 H.T.	B	2.5, 3,4S	.75	.75				
450/80	B	3 S	.70	.70		.72	.68	
600/80,120	B,E	3 S	.69	.69			.67	
900/120	B	3.4 S	.68				.66	
900/120 H.T.	B	3.6 S	.70				.68	

"Jetspun" Colored Yarns

Den./Fil.	Tenacity	Turns	Weaving Cones	Beams*	Cakes	Colors
100/40	Regular	2.5S	1.39	1.39		All
150/40	Regular	2.1S	1.26	1.26		All
200/40	Regular	8.3S	1.27			All
450/80	Regular	3.0S	1.05			All
300/40	High	3.4S	1.10	1.10		All
600/80	High	3.4S	1.06			All
900/120	High	3.4S	1.05	1.05		All

Registered trade mark of American Enka solution dyed rayon yarn.
* Single color.

"Skyloft"

American Enka's Lofted Filament Rayon Yarn
Natural and Jetspun (R)
Types Available and Prices

Denier	Den/Per Filament	JETSPUN Natural	Black	Other Colors
2200	15	$.67	$.79	$.84
2700	15	.65	.75	.82
4300	8	.64	.74	.81
5300	15	.63	.73	.80

American Viscose Corp.

Effective December 14, 1956

Graded Yarns

Denier	Filament	Type	Short Skeins	Long Skeins	All Cones Beams Tubes	Cakes
50	20	Bright & Dull	$	$1.59	$1.56	$1.45
60	10	Bright	....	....	1.41	1.30
75	10-30	Bright	1.24	1.20	1.17	1.08
75	30	Dull	....	....	1.17	1.08
100	14-40	Bright	1.12	1.07	1.04	.96
100	60	Dull	....	....	1.06	.98
150	24-40-60	Bright & Semi-Dull	.99	.94	.91	.86
150	40	Dull	....	....	.91	.86
150	90	Dull	....	....	.92	.87
200	10-44	Bright	.90	.85	.82	.78
250	60	Semi-Dull & Dull	.82	.78	.75	.73
300	44	Bright & Dull	.79	.76	.73	.71
300	234	Dull	....	....	.75	.73
300	120	Rayflex 6-Turns	....	....	.85	.83
450	100	Bright	....	.72	.70	.68
600	100	Bright	....	.71	.69	.67
900	60-100-150	Bright	....	.70	.68	.66
1200	75	Bright	....	.67	.65	....
2700	150	Bright	....	.70	.68	....

Extra Turns Per Inch

75	30	Bright 6-Turns	$1.36	$1.32	$1.29	$ ....
100	40	Bright 6-Turns	1.24	1.19	1.16	1.08
150	40	Bright 6-Turns	1.09	1.04	1.01	.96
200	44	Bright 6-Turns	....	.95	.92	....
300	15	Bright 5-Turns	....	....	.78	....
300	44	Bright 6-Turns	....	.86	.83	.81
600	30	Bright 5-Turns	....	.76	.74	.72

Rayflex Yarns

75	30	Rayflex	$	$	$1.20	$1.11
100	40	Rayflex	....	....	1.07	.99
150	60	Rayflex	....	....	.94	.89
200	75	Rayflex	....	....	.85	.81
300	120	Rayflex	....	....	.75	.73
300	120	Rayflex 6-Turns	....	....	.85	.83
450	120	Rayflex	....	....	.72	.70
600	234	Rayflex	....	....	.71	.69
900	350	Rayflex	....	.72	.70	.68

Super Rayflex Yarns

600	490	Super Rayflex	$	$	$ .78	$ ....
900	720	Super Rayflex	....	....	.77	....

Thick and Thin Yarns

150	40-90	Bright & Dull	$	$	$1.15	$ ....
200	75	Bright & Dull	....	....	1.05	....
300	120	Bright & Dull	....	....	.95	....
450	100	Bright & Dull	....	....	.92	....
490	120	Bright & Dull	....	....	.95	....
900	350	Dull	....	....	1.00	....
920	120	Bright & Dull	....	....	1.00	....

Colorspun Yarns

Currently producing regular and high tenacity at premiums at $.35 per pound.

Viscose Filament Yarns

The following material deposit charges are required:

Metal Section Beams	$170.00 each
Wooden Section Beams	55.00 each
Wooden Section Beam Crates	30.00 each
Metal Section Beam Racks	75.00 each
Metal Tricot Spools—14" flange	30.00 each
21" flange	60.00 each
32" flange	150.00 each
Metal Tricot Spool Racks—14" flange	135.00 each
21" flange	100.00 each
32" flange	75.00 each
Wooden Tricot Spool Crates	20.00 each
Cloth Cake Covers	.05 each

Same to be credited upon return in good condition—freight collect.
Terms: Net 30 days.

Celanese Corp. of America

Current Prices
Effective December 14, 1956

Den.	Fil.	Twist		Beams	Cones	Cakes	Non Shrunk Tubes
#49 and #14 Production							
75/30/3	Bright			....	$1.11	$1.03	....
100/40/2Z	"			$.96	....	....	....
100/40/3	"			.98	.96	.91	....
100/40/5	"			....	1.02	.97	....
100/60/3	"			....	.97	.92	....
125/40/2Z	"			.94	.92	....	....
150/40/3	"			.89	.85	.80	....
150/40/2Z	"			.87	....	....	....
150/40/5	"			....	.91	.86	....
150/40/8	"			....	.97	.92	....
150/40/0	"	NS		....	.71	....	....
300/50/3	"			.72	.71	.69	....
300/50/0	"	NS		....	.63	....	....
#20 Production							
150/40/3	Bright			.87	.83	.78	....
150/40/0	"	NS		....	.71	....	....
150/40/2Z	"			.87	....	....	....
300/50/3	"			.72	.71	.69	....
300/50/0	"	NS		....	.63	....	....
#20 Production							
100/40/3	Dull			....	.96	.91	....
100/60/2Z	"			1.00	....	....	....
100/60/0	"			....	.93	....	....
100/60/5	"			1.04	1.02	.97	....
150/40/3	"			.87	.83	.78	$.77
150/40/0	"	NS		....	.71	....	....
150/90/3	"			....	.90	.85	....
250/60/0	"	NS		....	.67	....	....
250/60/3	"			....	.75	....	.70
#52 Thick & Thin Rayon							
150/60/3	Bright			....	1.15	....	....
450/120/3	"			....	.89	....	....

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with orders December 7, 1956

Bright and Dull

Den.	Fil.	Turns/ Inch Up to		(A) Cones, Beams, Tubes	Skeins	Cakes
40	20	3	Textile "Cordura"*	$1.90	$1.90	$1.85
50	20	3		1.63	1.63	
50	20	3	Textile "Cordura"	1.65	1.65	1.60
50	35	3	Textile "Cordura"	1.70	1.70	1.65
75	10	3		1.17	1.20	1.08
75	30	3		1.17	1.20	1.08
100	15	3		1.04	1.07	.96
100	40	3		1.04	1.07	.96
100	60	3	Dull	1.06	1.09	.98
125	50	3		.96	.98	.90
150	40	3		.91	.92	.86
150	60	3		.91		
150	60	3	Textile "Cordura"	.92	.93	.87
150	90	3	Dull	.92	.93	.87
150	100	3	Dull	.92	.93	.87
300	50	3.5		.73	.76	.71
300	120	3	Textile "Cordura"	.74	.77	.72
450	72	3		.70	.72	.68
600	96	3		.69	.71	.67
600	240	3	Textile "Cordura"	.70	.72	.68
900	50	3		.68	.70	.66
900	144	3		.68	.70	.66
1165	480	3	Textile "Cordura"	.68	.68	.65
1800	100	3		.68		
2700	150	3		.68	.70	

Thick and Thin

100	40	3	#7	1.38		1.38
150	90	3	#7	1.15	1.16	1.15
200	80	3	#7	1.05	1.06	1.05
450	100	3	#7	.89	.90	.89
1100	240	3	#60	1.00		1.00
2200	480	3	#60	.95		.95

(A) 2¢/lb. additional for cones less than 3# and tubes less than 2#.
Terms: Net 30 days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.
* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective December 21, 1956

Denier	Filament	Turns per In.	Type	2.8 Lb Cones	4.4 Lb Cones	Beams	2.2 Lb Tubes	4.4 Lb Tubes
100	40	2.5 "S"	Bright	1.04		1.04		
150	40	2.5 "S"	Bright	.91		.91		
150	40	2.5 "S"	Luster #4	.91		.91		
150	40	2.5 "S"	Bright intermediate strength	.92				
200	20	2.5 "S"	Bright	.82				
200	40	2.5 "S"	Bright	.82				
300	44	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Luster #4	.73		.73		
300	80	2.5 "S"	Bright extra strong	.75		.75		
450	60	2.0 "S"	Bright		.70	.70		
600	90	1.5 "S"	Bright		.69	.69	.69	.69
900	50	2.0 "S"	Bright		.68	.68	.68	.68
900	150	1.5 "S"	Bright		.68	.68	.68	.68

Luster #4 is semi-dull.
Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points east of the Mississippi River. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

North American Rayon Corp.

Current Prices

First Quality Yarns	Den/Fil	Twist	Cones Knitting* Cones	Cones No Twist Knitting Cones	Cones Beams, Tubes** and Weaving Cones	Untreated Cakes
	75/30	3.5			$1.17	$1.08
	75/30	7			1.30	
	75/30	15			1.37	
Normal	75/30	20			1.40	
Strength Yarns	100/40/60 Brt.	3.5			1.04	.96
NARCO	100/40/60	12			1.22	
	125/52/60	3			.96	.90
	125/52	10			1.13	
	150/42/60/75	3	$.90		.91	.86
	150/42	0		$.71		
	300/75	3	.73		.73	
	300/75	0		.63		
	600/98	3	.69		.69	
	900/46	2.5	.68		.68	
	1800/92	2.5	.68		.68	
Semi-High Strength Yarns	300/75	3			.74	
Hi-NARCO						

* Oiled Cones $.01 Per Pound extra for Graded Yarns only.
** 1 lb. tubes $.02 Per Pound extra for Graded Yarns only.
Terms: Net 30 days, F.O.B. shipping point, minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight to Memphis, Tennessee allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point.
Prices subject to change without notice.

RAYON HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective June 1, 1957

Tempra (High Tenacity)

Denier	Elongation	Beams & Cones
1100/480	Low	.59
1230/480	High	.59
1650/720	Low	.55
1820/720	High	.55
2200/960	High & Low	.54

Suprenka (Extra High Tenacity)

1650/720	Low	.58
1900/720	High	.58
2200/960	Low	.57

Terms: Net 30 days, f.o.b. Enka, North Carolina, or Lowland, Tennessee; minimum freight allowed to first destination east of the Mississippi River.

or the DYER and FINISHER

Nopco's 50th Birthday

Nopco Chemical Co., New Jersey producer of processing chemicals, vitamin products, and urethane foams, is now celebrating its 50th anniversary. The textile industry was Nopco's first customer when it was founded in 1907 by Charles P. Gulick and Arthur Philips, and it is still one of the largest users of the firm's products. Nopco, founded with an investment of $1,000, currently grosses $28,000,000. Listed on the New York Stock Excange since 1940, it recently paid its 109th consecutive dividend.

Color Stripper

"Wilstrip," a liquid titanium preparation for controlled stripping of reducible dyes, has been announced by A. L. Wilson Chemical Co. The product comes in a highly concentrated form for mixing with ordinary tap water. Its effectiveness is said to be controlled by varying the strength of the solution and applying heat. "Wilstrip" also can be used to remove an unwanted color from another without injuring the base color. *For further information write the editors.*

Orlon Dyeing Agent

Crest Chemical Corp. has introduced Crest Retard NM, an agent for use in obtaining level application of cation-active dyes to Orlon. The new product is said to prevent the rapid exhaustion of the dyestuff at temperatures above 200 degrees F. *For further information write the editors.*

Lanolin Emulsion

"Lanolube," a lanolin emulsion said to give a firm soft hand and improved dulling characteristics when used in conjunction with polyvinyl acetate finishes on nylon hosiery, has been announced by Richmond Oil, Soap & Chemical Co. The product contains a high percentage of a specialized lubricant eliminating the necessity of using an additional board lubricant in the finish bath. *For further information write the editors.*

Dye Identification

American Cyanamid Co. has published Dyes Technical Bulletin No. 846 as an aid to more rapid and accurate identification of dyes. Information in the bulletin is designed to save time and effort in shade matching and also prevent over-stocking with several versions of the same dye types under different names. *For further information write the editors.*

yarns dyed by GLOBE . . .

Sweaters knit from butter-soft, lofty Orlon yarns, dyed by Globe, have the cashmere-like quality that delights the heart of style-and-comfort-conscious men and women without exception. This is not surprising for Globe technicians had a leading role in the development of present methods of Orlon dyeing, and Globe dyers have been dyeing it continuously ever since, in production quantities.

FOR DYEING ORLON YARN YOU CAN RELY ON GLOBE

Globe does package dyeing on tubes, skein and warp dyeing and bleaching, warp mercerizing and sizing.

Yarns we process include cotton, rayon, worsted, nylon, linen, blend and novelty yarns. Also Acrilan —Dacron — Orlon.

Globe DYE WORKS CO.
1865 1958

4500 Worth Street Philadelphia 24, Pa.
JEfferson 5-3301

American Viscose Corp.

Effective November 1, 1956
Revised June 10, 1957

Super Rayflex

Denier	Filament	Twist	Beams	Cones
1100	980	0	$.63	$.63
1100	980	4.1Z	.63	
1100	980*	0-2Z		.63
1650	980	0	.58	.58
1650	980	4.1Z	.58	
1780	980*	0-2Z		.58
2200	980	0	.57	.57

* High Elongation Sewing Yarn.

Tire Yarn

1100	490	2.5Z	.59	
1650	980	0	.55	.55
1650	980	3.6Z-4.1Z	.55	
2200	980	0	.54	.54

High Strength

1150	490	2.5Z	.59	.59
1230	490	3.1Z	.59	.59
1650	980	4Z	.55	.55
1875	980	4Z	.55	.55

Super Rayflex, Tire Yarn and High Strength yarns are sold "Not Guaranteed for Dyeing."

Tire Fabric

	Tire Yarn	Super Rayflex
1100/490/2	$.69	$.73
2200/980/2	.625	.655

Above prices based on 80% minimum Carcass, 15% maximum Top Ply, 5% maximum Breaker.

1650/980/2

* Production Factor

525	Open	Carcass	$.635	$.665
300	490	Top Ply	.645	.675
115	275**	Breaker	.67	.70

* Determined by dividing total ends by picks.

** Orders limited to 5% of total 1650 Fabric booked for any given period.

The following deposit charges are made on invoices:

Beams	$55.00 each
Crates (Metal)	75.00 each
Fabric Shell Rolls	3.50 each

Same to be credited upon return in good condition—freight collect
Terms: Net 30 days.

Celanese Corporation of America

Effective December 27, 1955
Supersedes September 12, 1955

Fortisan Yarn Prices

Denier	Packages	Natural	Black
30/2.5/40	2 lb. Cones	$3.00 lb.	$3.35 lb.
60/2.5/80	4 " "	2.40 "	2.75 "
90/2.5/120	4 " "	2.25 "	2.60 "
120/2.5/160	4 " "	2.05 "	2.40 "
150/2.5/180	4 " "	1.95 "	2.30 "
270/2.5/360	4 " "	1.85 "	2.20 "
300/2.5/360	4 " "	1.85 "	2.20 "
60/2.5/80 Olive Green—Spun Dyed—OG106		4 lb. Cones	3.50 lb.

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U. S. A. east of the Mississippi River.

Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

Fortisan-36 Rayon Yarn
Bright

Denier and Filament	Twist	4# cones	8# cones	Tubes	Beams
270/280	0.8Z	$2.30			
300/280	0.8Z	$2.05			
300/280	3Z	$2.20			
400/400	0.8Z	$1.75			$1.70
400/400	0			$1.75	
800/800	0.8Z	$1.25	$1.25		$1.20
800/800	3Z	$1.40			
800/800	0			$1.25	
1600/1600	0.8Z	$1.15	$1.15		$1.10
1600/1600	2½Z	$1.30			
1600/1600	0			$1.15	

Terms: Net 30 days. Shipments prepaid to any destination in U. S. A. East of the Mississippi River. Shipments West of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with shipments April 17, 1957

"Super Cordura"*

Den Fil	Turns/in	All Packages
1100-480	2	$.63
1100-720	2	.63
1200-720	2	.63
1250-480	2	.63
1530-960	2	.61
1600-960	2	.58
1650-720	2	.58
1650-1100	2	.58
1800-1100	2	.58
1900-720	2	.58
2200-960	2	.57
2200-1440	2	.57
2400-1440	2	.57
2450-960	2	.57

Terms: Net 30 days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective November 1, 1956

Unbleached Bright High Tenacity Yarns

SINGLE END BEAMS AND CONES:

Den.	Fil.	Turns Per In.	4.4 Lb. Cones	Beams	2.2 Lb. Tubes	4.4 Lb. Tubes
1100	480	1.5 "Z"	.59	.59	.59	.59
1650	720	1.5 "Z"	.55		.55	.55
2200	1000	1.5 "Z"	.54	.54	.54	.54
3300	1440	1.5 "Z"	.54	.54	.54	.54
4400	2000	1.5 "Z"	.54	.54	.54	.54

"Above Prices apply to Type 100. Type 200 Tyron Prices are 3¢ more."

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

Prices are subject to change without notice.

North American Rayon Corp.

High-Strength Yarns—SUPER-NARCO

		Twist	Cones	Beams
1650	720	3Z		$.55
1850	720	3Z	$.55	
Super High Strength Yarns—				
1650	720	1.5Z	.58	.58

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b delivery point.

ACETATE FILAMENT YARN

American Viscose Corp.

Current Prices
Effective December 21, 1956

Bright and Dull

* Intermediate Twist

Denier & Filaments	Cones & 4-6 Lb. Tubes	Twister Tubes	Warps	Spinning Cones	Twist Warps
55/14	$1.04	$1.02	$1.05	$.98	$.99
75/20	1.00	.98	1.01	.94	.95
100/28	.95	.93	.96	.89	.90
120/32	.86	.84	.87	.80	.81
150/41	.77	.76	.78	.72	.73
200/54	.73	.72	.74	.69	.70
300/80	.69	.68	.70	.65	.66

* Standard Twist 2¢ additional.
Terms: net 30 days.

Celanese Corp. of America

Current Prices
Effective December 20, 1956

Bright and Dull

	Intermediate Twist				Spinning Twist		
Denier and Filaments	4 & 6-Lb Cones	Beams	4 & 6-TM Tubes	4-Pound Cheeses	Cones	Beams	O Twist Tubes
45/13	$1.17	$1.18	$	$	$	$1.12	$ ....
55/15	1.04	1.05	....	....	.98	.99	.925
75/20	1.00	1.01	.98	....	.94	.95	.84
75/50	1.02	1.03	1.00	....	....	.97	.89
100/26-40	.95	.96	.93	....	.89	.90	.81
120/40	.86	.87	.85	....	.80	.81	....
150/40	.77	.78	.77	.77	.72	.73	.69
200/52	.73	.74	.73	....	.69	.70	....
300/80	.69	.70	.69	....	.65	.66	.63
450/120	.67	.68	.67	....	.63	.64	....
600/160	.65	.66	.65	....	....	....	....
900/80-240	.63	.64	.63	....	....	....	.61

150 Denier 12-TM Tubes ..... .76
55/0/15 Dull Tricot Beams ..... .985
2-Pound Cheeses ..... .01 Less Than 4-Pound Cheeses
2-BU and 4-Bu Tubes ..... Same Price as 4 and 6-Lb. Cones
2-Lb. Twist Tubes ..... .01 Less Than 4 & 6-Lb. Twist Tubes on 120, 200 and 300 Denier Intermediate Twist

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

Celaperm Filament Yarn Prices

	Intermediate Twist		Spinning Twist	
Denier and Filaments	4 & 6-Lb. Cones	Beams	Cones	Beams
55/15	$1.37	$1.38	$1.31	$1.32
75/20	1.34	1.35	1.28	1.29
100/26	1.28	1.29	1.22	1.23
120/40	1.19	1.20	1.13	1.14
150/40	1.11	1.12	1.06	1.07
200/52	1.05	1.06	1.01	1.02
300/80	1.01	1.02	.97	.98
450/120	.99	1.00	.95	.96
600/160	.97	.98	....	....
900/80	.94	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Dyeing Notes

(Continued from Page 59)

Procion Resist Agent

Arnold, Hoffman & Co., Inc. has introduced a new Procion resist agent, for obtaining white resists under ground shades padded or cover-printed with Procion dyestuffs. The agent is said to give good results when used in a British Gum thickening, with the printed fabrics possessing good storage stability. It is reported that the agent can be removed easily by a short treatment in boiling detergent and soda ash, in the event of faulty printing.

Arnold, Hoffman also has brought out Synthravon A, a nonionic non-substantive textile softener, which is recommended as a plasticizing agent for finishes containing starches or textile resins. *For further information write the editors.*

Onyx Names Licensee

Burlington Finishing Co., a subsidiary of Burlington Industries, has been appointed a licensee for Aston anti-static finish manufactured by Onyx Oil and Chemical Co. Burlington will apply Aston to synthetic fabrics used for suitings and other apparel. Astonized slips, sleepwear, dresses, suits, etc., according to Onyx, will not cling, ride up, collect dust or lint. Aston is also said to impart a "breathing" quality which allows fabrics to absorb moisture.

Butadiene Manual Offered

Pyro-Tex Chemical Corp. has issued what it believes to be the first technical manual ever published on a million-ton per year product—butadiene. The 42-page book contains complete physical properties, polymerization data, chemical properties and detailed information on all principal butadiene reactions. *For free copies write the editors.*

New Chemicals Offered

Two organic chemicals, benzonitrile and benzoguanamine, are now being produced in commercial quantities by Tennessee Products and Chemical Corp. Benzonitrile is a basic chemical used in making benzoguanamine and is widely adaptable for a variety of processes including organic synthesis, plastics, rubber, pharmaceuticals and synthetic coatings. A colorless liquid with an almond-like odor, it is immiscible with water and often is used as a solvent. Benzoguanamine, similar in many respects to melamine, is particularly useful in the manufacture of textile and industrial finishes. *For further information write the editors.*

Early Print Designs

Samples of old printed textiles from the former Hamilton Mills, Lowell, Mass., recently given to the Old Slater Mill Museum, Pawtucket, R. I., are now on display at the museum. The 35 large volumes of samples from the 1890s through the early 1900s came from the old Lowell Textile School chemistry department.

Hydrogen Peroxide Booklets

Solvay Process Division of Allied Chemical & Dye Corp. has issued two new technical booklets on hydrogen peroxide. One describes the new activated hydrogen peroxide bleaching process for cotton, covering operating details, commercial applications and savings in cost of chemicals. The second includes detailed information on the methods and equipment for diluting commercial grades of hydrogen peroxide. It contains the dilution formulas for 27½, 35 and 50% hydrogen peroxide. *For free copies write the editors.*

Permanent Pleats in Wool

An Australian process has been developed to produce permanent pleats in all-wool dresses and skirts and permanent knife-sharp creases in men's all-wool trousers which will not disappear in rain, warm soapy water or drycleaning. The process, known as "Si-Ro-Set," was developed in the Geelong, Victoria laboratories of the Commonwealth and Industrial Research Organization. In the process, the garment is sprayed with a weak chemical solution just before the final pressing. The crease is then fixed by steam pressing for 15 seconds.

"Fabulized" Sales Agent

Fabulized, Inc., manufacturers of a new finish said to make synthetic fabrics, including blends, as absorbent as natural fiber fabrics has appointed Prospect Chemical Co., Inc., Mt. Prospect, Ill., as midwest sales representative.

A new booklet, "The Fabulous Facts about Fabulized", has just been published to explain the functions of the new finish. *For free copies write the editors.*

New Chemicals Bulletin

The new 1958 "Physical Properties" booklet of Union Carbide Chemicals Co., a division of Union Carbide Corp., has been published. The 28-page booklet is a guide to Carbide's products and services and includes the latest physical property data of more than 350 organic chemicals. Fifty new chemicals. introduced by Carbide since the previous edition also are described. *For free copies write the editors.*

NYLON
DACRON
RAYON
WORSTED

COMPLETE PACKAGE SERVICE on dyed and thrown filament yarns, delivered on tubes, cones or in the cake.

Spun and Worsted Yarns

Dyers & throwsters of modern yarns since 1922

HOFFNER
RAYON CO.

GENERAL OFFICES

General Offices at Belgrade & Ontario Streets, Philadelphia 34, Pennsylvania. Plants at Philadelphia and Quakertown, Pennsylvania.

SALES REPRESENTATIVES

The Tillinghast-Stiles Co.
Providence, R. I. Chicago, Ill.
Shannonhouse & Wetzell, Johnston Building, Charlotte 2, N. C.

Celaperm Black Yarn Prices

Effective March 11, 1955

Denier and 4 & 6-Lb.

Filaments	Intermediate Twist Cones	Intermediate Twist Beams	Spinning Twist Cones	Spinning Twist Beams
55/15	$1.17	$1.18	$1.11	$1.12
75/20	1.14	1.15	1.08	1.09
100/26	1.08	1.09	1.02	1.03
120/40	.99	1.00	.93	.94
150/40	.91	.92	.86	.87
200/52	.85	.86	.81	.82
300/80	.81	.82	.77	.78
450/120	.79	.80	.75	.76
600/160	.77	.78	....	....
900/80	.74	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Acetate

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	Intermediate Twist 4 & 6 Lb. Tw. Tbs.	Intermediate Twist Cones	Intermediate Twist Bms.
45-13	$1.03	$1.11		$1.12			$1.17	$1.18
55-18	.925	.985		.99			1.04	1.05
55-24	.925	.985		.99			1.04	1.05
75-24	.84	.94		.95		$.98	1.00	1.01
75-50				.97		1.00	1.02	1.03
100-32	.81	.89		.90		.93	.95	.96
120-50	.77	.80		.81		.85	.86	.87
150-40	.69	.72	.72	.73	.77	.77	.77	.78
200-60	.68		.69	.70	.73	.73	.73	.74
240-80			.67				.71	
300-80	.63	.65	.65	.66	.69	.69	.69	.70
450-120	.63		.63	.64	.67	.67	.67	.68
600-160			.62	.63	.65	.65	.65	.66
900-44	.61				.63	.63	.63	.64
900-240					.63	.63	.63	.64
1800-88					.61	.61	.61	.62
2700-132					.61	.61	.61	.62
3000-210					.61	.61	.61	.62

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Intermediate Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Color-Sealed

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist Twisted Tubes 2 Lb.	Intermediate Twist Twisted Tubes 4 & 6 Lb.	Intermediate Twist Cones	Intermediate Twist Beams
55-18	$1.245	$1.315		$1.32	$1.35	$1.35	$1.37	$1.38
75-24	1.18	1.28		1.29	1.32	1.32	1.34	1.35
100-32	1.14			1.23	1.26	1.26	1.28	1.29
150-40	1.03	1.06	1.06	1.07	1.10	1.11	1.11	1.12
200-60	1.00		1.01	1.02	1.04	1.05	1.05	1.06
300-80	.95	.97	.97	.98	1.00	1.01	1.01	1.02

(A) Regular Twist—Add $.02 to Intermediate Twist Price

Black

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	Intermediate Twist 4 & 6 Lb. Tw. Tbs.	Intermediate Twist Cones	Intermediate Twist Beams
55-18	$1.045	$1.115		$1.12		$1.15	$1.17	$1.18
75-24	.98	1.08		1.09		1.12	1.14	1.15
100-32	.94			1.03		1.06	1.08	1.09
150-40	.83	.86	.86	.87		.91	.91	.92
200-60	.80		.81	.82		.85	.85	.86
300-80	.75	.77	.77	.78	.81	.81	.81	.82
450-120			.75	.76	.79	.79	.79	.80
600-160			.73	.74	.77	.77	.77	.78
900-240			.73	.74	.74	.74	.74	.75

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Int. Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Specialty Yarns

Type 20 — Same Price as Regular Yarn

Type C — Same Price as Regular Yarn

Thick & Thin

Denier & Filament	Natural Cones	Natural Beams	Black Cones	Black Beams	Color-Sealed Cones	Color-Sealed Beams
200-64 Int. Twist	1.05		$1.15		$1.35	
200-64 Reg. Twist	1.08	$1.09	1.17	$1.21		

Terms: Net 30 days. Subject to change without notice.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective December 21, 1956

"Estron"* Yarn, Bright or Dull — White

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Tubes	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams	Zero Twist Tubes	Tricot Beams Spun Twist	Tricot Beams Zero Twist
55/13	$1.06	$1.04	$1.02	$1.05	$.98	$.99	$.92½	$.99	$.98½
75/19	1.02	1.00	.98	1.01	.94	.95	.84	.95	....
75/49	1.04	1.02	....	1.03	....	....	....	....	....
100/25	.97	.95	.93	.96	.89	.90	.81	....	....
120/30	.88	.86	.84	.87	.80	.81	....	....	....
150/38	.79	.77	....	.78	.72	.73	.69	....	....
200/50	.75	.73	....	.74	.69	.70	....	....	....
300/75	.71	.69	....	.70	.65	.66	.63	....	....
450/114	.69	.67	....	.68	.63	.64	....	....	....
600/156	.67	.65	....	.66	.62	.63	.63	....	....
900/230	.65	.63	....	.64	....	....	.61	....	....
Heavier	....	....	....	....	....	....	.56	....	....

Current Prices—December 19, 1955

"Chromspun"*—Standard Colors (Except Black)

Denier & Filament	Regular Twist Cones	Regular Twist Beams	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams
55/13	$1.39	$1.40	$1.37	$1.38	$1.31	$1.32
75/19	1.36	1.37	1.34	1.35	1.28	1.29
100/25	1.30	1.31	1.28	1.29	1.22	1.23
150/38	....	....	1.11	1.12	1.06	1.07
300/75	....	....	1.01	1.02	.97	.98
450/114	....	....	.99	1.00	.95	.96
900/230	....	....	.94	.95	....	....

Current Prices

"Chromspun"*—Black

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist & Spun Twist Beams
55/13	$1.19	$1.17	$1.18	$1.12
75/19	1.16	1.14	1.15	1.09
100/25	1.10	1.08	1.09	1.03
150/38	.93	.91	.92	.87
200/50	.87	.85	.86	.82
300/75	.83	.81	.82	.78
450/114	.81	.79	.80	.76
900/230	.76	.74	.75	....

Prices are subject to change without notice.

Prices on special items quoted on request.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of Mississippi River. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

* "Estron" and "Chromspun" are trade-marks of the Eastman Kodak Co.

RAYON STAPLE and TOW

American Viscose Corp.

Current Prices

Rayon Staple

	Bright and Dull
Regular	$ .31
Extra Strength	
1.0 Denier	.34
"Viscose 32A"	.36
"Avisco Crimped"	
1.25 Denier	.34
3.0 & 5.5 Deniers	.32
8.0 & 15.0 Deniers	.34
"Avisco Super L"	
8.0, 15.0 & 22.0 Deniers	.35
Short Staple Blend	.33

Rayon Tow

Grouped Continuous Filaments (200,000 Total Denier)	
1.5, 3.0 & 5.5 Denier Per Filament	.33
9.0 Denier Per Filament	.35
Grouped Continuous Filaments (4400/300 & 2000/1500)	.65

Prices of other descriptions on request.

Terms: Net 30 days.

Celanese Corp. of America

Current Prices

Rayon Tow

	Bright & Dull
1.5, 3, 5 D.P.F.	.32
8 D.P.F.	.34

Courtaulds (Alabama) Inc.

Effective August 22, 1957

Rayon Staple

	Bright	Dull
1½ and 3 denier	$.31	$.31
Available in 1½", 1-9/16" and 2".		

Crimped Rayon Staple

3 and 5½ denier	$.32	$.32
Available in 1-9/16" and 3".		
3 denier		.32
Available in 2".		

9/11/57

Textile News Briefs

Enka Price Increases

American Enka has increased prices 5 cents a pound for its new lofted filament rayon yarn, "Skyloft," including natural and solution-dyed, to reflect increased operation costs. Skyloft has been designed for carpets, automotive upholstery and drapery fabrics. New prices for natural yarn in the following denier and filament are: 2200/15, 67 cents; 2700/15, 65 cents; 4300/8, 64 cents; 5300/15, 63 cents. Solution-dyed black prices are 10 cents more a pound than the natural prices, with prices for other colors 17 cents more.

Eastman to Make Polyester

Tennessee Eastman Co., division of Eastman Kodak Co., plans to add to its experimental equipment for production of T-16 polyester fiber. The small amounts of fiber that will become available about mid-1958 will be used for further mill and trade evaluation trials.

Sun Acquires Anspacher

Acquisition of Ansbacher-Siegle Corp. has been announced by Sun Chemical Corp. Ansbacher-Siegle, a manufacturer of organic color pigments, will continue to operate under its present management as a division of Sun Chemical.

Diamond Mills Expansion

A two-year program of expansion and improvement of Diamond Mills has been set up by Samuel Rosenblum, president, who recently aquired the firm from Julius Kayser & Co. Rosenblum also is president of Danita Hosiery Corp. Approximately $150,000 will be spent for modernizing knitting and finishing equipment at Diamond's High Point, N. C., plant during 1958 and 1959. Twin goals of the program are a 50% increase in overall sales and "maximum branded sales," as against unbranded merchandise.

Hunter Buys Fuller

James Hunter, Inc., Greenville, S. C., has purchased all facilities, assets and good will of the Frank F. Fuller Co. The acquisition will permit Hunter to add spraying systems for textile application to its line of textile equipment. Hunter is a subsidiary of James Hunter Machine Co., North Adams, Mass., and currently manufactures for the textile industry fiber feeding and blending equipment, materials handling systems and a new bobbin holder for spinning frame creels.

Shelley Ban-Lon Dep't

A separate new department for knitting ladies' bulky knit Ban-Lon sweaters is now in full operation at Shelley Knitting Mills, Inc., Philadelphia, Pa. The department is the result of research at the plant to devise techniques in knitting Ban-Lon to produce bulky knits in this yarn, according to John M. Ashe, president.

Dan River Research Growth

Dan River Mills, Inc., has announced plans to construct a new research and chemical manufacturing plant on a 13-acre tract near Danville, Va. Tentative plans call for a two-level building with about 50,000 square feet of floor space. The building will be used in part for expansion of the company's research facilities and also for the manufacture of various chemicals required in Dan River's manufacturing and finishing operations.

New Surgical Nylons

The Chester H. Roth Co. has announced an elastic, sheer 100% nylon stocking, "Supp-hose" which it describes as overcoming leg fatigue and performing the functions of a surgical stocking. The company said that tests by doctors indicated that the new stocking gives support previously possible only in a stocking that contained rubber.

Courtaulds Adopts L-22

Courtaulds (Alabama) Inc. has adopted the L-22 end-use standards for finished rayon and acetate fabrics as the basis for the test program in connection with the merchandising of its Coloray solution dyed rayon staple, according to trade quarters. Previously, Reeves Bros. and American Viscose Corp. had adopted the L-22 standards.

The Story of Wool

"The Story of Wool," a new 24-page booklet has been published by the Wool Bureau, Inc. Prepared for educators, manufacturers and others interested in such information, the booklet covers the history of wool growing, the making of the fabric and its use and care. Copies are available at 10 cents each by writing to the editors.

Tests for Textiles

A book on textile materials, including the latest ASTM tentative and standard methods of tests, specifications, and definitions pertaining to textile materials has been prepared by American Society for Testing Materials. The book contains a table of the basic properties of textile fibers, psychrometric table for relative humidity, and the yarn number conversion table. Copies may be had at $6.25 each.

...with the Lindly Automatic Photo-Scanner

Set the amazing Photo-Scanner to detect your smallest allowable defect. Automatically, it does the rest...continuously scanning the tricot—**as it's knitted**—automatically stops the machine for larger faults.

You get top quality in finished goods—quality **you** determine—a measure of quality recognized throughout the industry.

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Other Outstanding Lindly Automatics
Automatic Yarn Inspectors
Automatic End Break Detectors
Automatic Yarn Defect Analyzer

It Pays to Know the Lindly Count

LINDLY & COMPANY, INC.
248 HERRICKS ROAD
MINEOLA, NEW YORK

"Coloray" Spun Dyed Rayon Staple

	1½ Den. 1-1/16"	3 Den. 2"	Price per Lb.
	(Code numbers for color and denier)		
Black	1404	1419	37¢
Tan	8004	8019	39¢
Medium Brown	8804	8819	39¢
Silver Grey	1004	1019	39¢
Mocha	7704	7719	39¢
Dark Brown	8604	8619	40¢
Ecru	7904	7919	40¢
Slate Grey	0804	0819	43¢
Light Blue	4004	4019	44¢
Sulphur	2004	2019	44¢
Nugget	2304	2319	44¢
Apple Green	5104	5119	45¢
Aqua	4704	4719	45¢
Rose	5804	5819	45¢
Sage	5304	5319	45¢
Crystal Blue	3904	3919	45¢
Peacock Blue	4604	4619	46¢
Medium Blue	4204	4219	48¢
Dark Blue	4404	4419	49¢
Hunter Green	5404	5419	49¢
Indian Yellow	2504	2519	49¢
Pink	6004	6019	50¢
Dawn Pink	5904	5919	50¢
Turquoise	4804	4819	50¢
Malachite Green	5204	5219	51¢
Red	7004	7019	56¢

(In addition to the above, Black is also available in:
1½ den. 1⅛" (1401) 3 den. 1-9/16" (1416)
3 den. 1⅛" (1413) 3 den. 2⅛" (1420)

Terms: Net 30 days f.o.b. LeMonye, Alabama. Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Rayon Co.

Div. Bigelow-Sanford Carpet Co., Inc.

Rayon Staple

Effective February 8, 1956

REGULAR

1.5 denier Bright	
1½"	.31
5½ denier Bright	
1½", 3" and 4½"	.32

VISCALON 66 (Crimped)

8 denier 3" Bright	.34
15 denier 3" Bright	.34
15 denier 3" Dull	.34

"KOLORBON"—Solution Dyed Rayon Staple—3" and 6"

	8 Denier Bright	15 Denier Dull	15 Denier Bright
Cloud Grey	45¢	45¢	....
Sandalwood	45¢	45¢	....
Nutria	45¢	45¢	....
Sea Green	45¢	45¢	....
Mint Green	45¢	45¢	....
Champagne	45¢	45¢	....
Cafe Brown	55¢	....	55¢
Midnight Black	45¢	....	45¢
Gold	48¢	48¢	....
Turquoise	45¢	45¢	....
Melon	48¢	48¢	....
Capri Blue	45¢	45¢	....
Charcoal Grey	45¢	45¢	....
Coco	46¢	46¢	....
Sable	47¢	....	47¢
Tangerine	58¢	....	58¢
Chinese Red	59¢	....	59¢
Larkspur Blue	45¢	45¢	....
Royal Blue	55¢	....	55¢
Lemon Peel	46¢	46¢	46¢
Kelly Green	46¢	46¢	46¢
Bitter Green	55¢	....	55¢

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

ACETATE STAPLE and TOW

Celanese Corp. of America

Current Prices

Staple

Celanese Acetate Staple	Bright & Dull
3, 5.5 & 8 Denier (Regular Crimp or High Crimp)	$.34
2, 12 & 17 Denier (Regular Crimp or High Crimp)	.35
35 Denier	.38
50 Denier	.40
Type F — 5.5, 8, 12, 17 Denier	.35
Type K — (Available under Celanese License Agreement)	.39
⅝" to ⅞" length (All Deniers)	.03 (premium)
Variable Acetate Fiber	.32
35 Denier Flat Filament Acetate	.40
Non-Textile Acetate Fibers	.27*

Tow (Celatow)

3, 5.5 & 8 Denier	$.36
2, 12 & 17 Denier	.37
35 Denier	.40
50 Denier	.42

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.

All previous prices withdrawn.

* No transportation allowed (F.O.B. shipping point).

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

NON CELLULOSIC YARN

NYLON

Allied Chemical and Dye Corporation

Caprolan®†

Effective April 15, 1957

Denier	Filament	Turn/In.	Twist	Type**	Package	1st Grade Price/Lb.
560	32	1	Z	HB	Aluminum Tube	$1.39
840	136	½	Z	HBT	Aluminum Tube	1.30
840	136	½	Z	HBT	Beams	1.30
Heavy Yarn						
2100	408	0	O	HB	Paper Tube*	$1.27
2100	112	0	O	HB	Paper Tube*	1.30
2500	408	0	O	HB	Paper Tube*	1.27
3360	544	0	O	HB	Paper Tube*	1.26
4200	680	0	O	HB	Paper Tube*	1.26
4200	224	0	O	HB	Paper Tube*	1.29
5000	816	0	O	HB	Paper Tube*	1.25
5000	280	0	O	HB	Paper Tube*	1.28
5800	952	0	O	HB	Paper Tube*	1.25
7500	1224	0	O	HB	Paper Tube*	1.24
10000	1632	0	O	HB	Paper Tube*	1.24
15000	2448	0	O	HB	Paper Tube*	1.23

Terms—Net 30 days.

Prices subject to change without notice.

All prices quoted F.O.B. Shipping Point.

Following are invoiced as a separate item.

Bobbins—45 cents each.

Aluminum Tubes—40 cents each.

Beams—$220.00 each.

Cradles for Beams—$53.00.

B—Bright.
H—High Tenacity.
T—Heat Stabilized.

* Paper Tubes non-returnable, no charge.

** Type is used to describe luster and tenacity

Lowest freight cost prepaid or allowed east of Mississippi River, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

† Allied Chemical's polyamide fiber.

American Enka Corporation

Nylenka Filament Yarn Prices

Effective June 1, 1957

Denier & Filament	Twist	Luster	Tenacity	Package	Yarn Weight per Package	Price per Pound, Std.	Price per Pound, Sub.
15/1	0.5Z	Semi-dull	Normal	Pirn	1 lb.	$5.25	$5.00
15/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	5.50	5.25
15/1	0.5Z	Dull	Normal	Pirn	1 lb.	5.30	5.05
20/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	4.60	4.30
30/6	0.5Z	Semi-dull	Normal	Pirn	2 lb.	2.36	2.21
40/8	0.5Z	Semi-dull	Normal	Pirn	2 lb.	2.01	1.81
50/13	0.5Z	Semi-dull	Normal	Pirn	2 lb.	1.91	1.76
200/16	0.9Z	Bright	Normal	Cone	4 lb.	1.49	1.44
200/16	0.5Z	Bright	Normal	Beam	...	1.54	....
200/34	0.9Z	Bright	Normal	Cone	4 lb.	1.49	1.44
200/34	0.5Z	Bright	Normal	Beam	...	1.54	....

Pirns charged at $.25 or $.45 each, depending upon type. Deposit refunded upon return of pirn in good condition. Cones are non-returnable. Beams and cradles are deposit carriers and remain property of American Enka Corporation.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

The Chemstrand Corp.

Current Prices

Effective December 19, 1956

Denier	Filament	Twist	Type*	Package	Standard	Second
10	1	O	SD	Bobbins	$8.42	$7.81
15	1	O	SD	Bobbins	5.25	5.00
15	1	O	D	Bobbins	5.30	5.00
15	1	O	D	Spools	5.41	....
30	10	Z	SD	Bobbins	2.36	2.21
30	10	Z	HSD	Bobbins	2.36	2.21
30	26	Z	SD	Bobbins	2.49	2.21
40	7	Z	SD	Bobbins	2.11	1.81
40	13	Z	SD	Bobbins	2.01	1.81
40	13	Z	SD	Spools	2.11	....
40	13	Z	D	Bobbins	2.06	1.81
40	13	Z	D	Spools	2.16	....
50	17	Z	SD	Bobbins	1.91	1.76
70	34	Z	SD	Bobbins	1.71	1.66
70	34	Z	B	Bobbins	1.71	1.66
70	34	Z	D	Spools	1.86	....
80	26	Z	SD	Bobbins	1.71	1.56
100	34	Z	SD	Bobbins	1.65	1.60
100	34	Z	HB	Bobbins	1.70	1.60
140	68	Z	SD	Bobbins	1.60	1.55
200	34	Z	B	Bobbins	1.49	1.44
200	68	Z	SD	Bobbins	1.56	1.46
210	34	Z	HB	Bobbins	1.49	1.44
210	34	Z	HB	Spools	1.54	....
210	34	Z	HB	Beams	1.54	....
260	17	Z	HB	Bobbins	1.49	1.39
260	17	Z	HB	Spools	1.54	....
420	68	Z	HB	Bobbins	1.39	1.29
630	102	Z	HB	Bobbins	1.39	1.29
840	136	Z	HB	Tubes	1.34	1.24
840	140	Z	HB	Beams	1.30	1.20
840	140	Z	HB	Tubes	1.30	1.20

*Types: D—Dull; SD Semi-dull; B—Bright; H—High tenacity.

Bobbins are invoiced at 25¢ or 45¢ each, depending on type; tubes are invoiced at 40¢ each; spools invoiced at $77.00 and $95.00 depending on type; and beams and crates for beams are invoiced at $220 and $25 respectively.

Prices subject to change without notice.

Bulletin on Daylighting Available

"Color Sells—Yes" is the title of a 4-page bulletin (#262) which discusses in detail the uses to which Macbeth Daylighting has been put in industries where the critical viewing or matching of colors to standards is a problem. *For a copy write the editors.*

Intimate Wear Styling

A brochure on style ideas for intimate wear has been issued by Beaunit Mills. The brochure, in the form of an artist's portfolio, contains sketches grouped according to adaptable design themes. The suggested drawings range from the very extreme in design to the more readily applicable. *For free copies write the editors.*

Big New Rayon Tires

The trend toward bigger tires with lower pressure will continue in 1958 cars, according to C. C. Gibson, Goodyear Tire & Rubber Co. vice president. He said Goodyear tires on 1958 autos will range in size from 7.50-14 to the "super soft" 11.00-14 tire recently announced by Chrysler for use on its Imperial models. The 11.00-14 tire is constructed of rayon with the company's custom tread pattern.

Clemson Enrollments Up

An increase in textile school enrollment has been reported by Clemson College, with 94 new freshmen students enrolled in the School of Textiles as against 79 a year ago. A college spokesman said that the curbing of the decline in textile students at Clemson is the result of a program jointly set up by the school and the South Carolina Textile Manufacturers' Association.

Survey of U. S. Industry

The economics and structure of major American industries are analyzed in the third edition of "Economics Of American Industry," by E. B. Alderfer, of the Wharton School of Finance, and H. E. Michl, of the University of Delaware. The authors include historical sketches of the leading industries, including textiles and apparel; the nature and sources of raw materials used; technology; the leading companies in each field; marketing and pricing policies; profits and financial aspects, and Government controls. Special attention is given to synthetic fibers in the textile industry, including new processes and new products. Published by McGraw-Hill Book Co., 710 pages; $7. *For further information write the editors.*

Materials Technology

The current trend in engineering schools to treat the subject of materials from the viewpoint of structure rather than from the conventional approach of engineering usage, is thoroughly covered in "Principles of The Properties Of Materials," written by Jacob Porter Frankel, Department of Engineering, University of California at Los Angeles, and formerly of Northwestern Technological Institute. The book places emphasis on properties of materials rather than specific materials. Mr. Porter's purpose is to present the subject in such a way that the student is prepared to solve not only difficult problems of today's advancing technology, but also those of the future. Published by McGraw-Hill Book Co., 240 pages; $6. *For further information write the editors.*

Book on Chain Drives

Link-Belt Co. has issued an 88-page book of detailed engineering data and illustrations of silent chain drives. The book contains tables of service factors, ratings, chain length and center distance computations. A 22-page section outlines procedure for selection of engineered drives. *For free copies write the editors.*

COLOR RICHES

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color uniformity...color versatility

UNLIMITED for fabric, apparel, home furnishings, everything

COURTAULDS'

COLORAY®

solution-dyed rayon fiber

CAPTIVE COLOR ..."CAN'T ESCAPE!"

COURTAULDS (Alabama) Inc., 600 Fifth Ave., N. Y. 20

SUPR-O-BAND

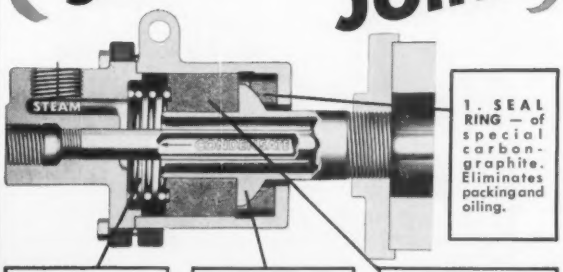
Spindle Drive Slippage? Improve your operation and quality with SUPR-O-BAND, the new banding for spindle drives on spinning, roving and twisting frames. Proved by mill operations. Write today for full details.

BENJAMIN BOOTH COMPANY

ALLEGHENY & JANNEY STS., PHILA. 34, PA. Booth

Only 4 internal parts in this self-supporting

Johnson Joint



With this 3000 Series Type S-B2 Joint, an assembly plate can be added at any time; it is used with the Johnson Syphon Elbow, to hold internal parts in position when the head is removed. Write for Bulletin No. S-2001.

The Johnson Corporation

844 Wood St., Three Rivers, Mich.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
7-1	0	200	Bobbin	$9.47	$8.82
10-1	0	200	Bobbin	8.42	7.82
12-1	0	200	Bobbin	7.35	6.85
15-1	0	200	Tricot Bms.	5.36	....
15-1	0	200	Bobbin	5.25	5.00
15-1	0	680	Tricot Bms.	5.41	....
15-1	0	680	Bobbin	5.30	5.00
20-1	0	200	Bobbin	4.42	4.12
20-7	0.5Z	200	Bobbin	2.91	2.61
20-7	0.5Z	200	Tricot Bms.	3.02	....
20-7	0.5Z	680	Bobbin	2.96	2.61
20-7	0.5Z	680	Tricot Bms.	3.07	....
20-20	0.7Z	209	Bobbin	6.00	....
30-10	0.5Z	200	Bobbin	2.36	2.21
30-10	0.5Z	200	Tricot Bms.	2.46	....
30-10	0.5Z	680	Bobbin	2.41	2.21
30-10	0.5Z	680	Tricot Bms.	2.51	....
30-26	0.5Z	200	Bobbin	2.49	2.21
40-7	0.5Z	200	Bobbin	2.11	1.81
40-13	0.5Z	200	Bobbin	2.01	1.81
40-13	0.5Z	200	Tricot Bms.	2.11	....
40-13	0.5Z	400	Bobbin	2.13	1.90
40-13	0.5Z	680	Bobbin	2.06	1.81
40-13	0.5Z	680	Tricot Bms.	2.16	....
40-34	0.5Z	200	Bobbin	2.21	1.81
50-10	0.5Z	200	Bobbins	2.11	1.76
50-17	0.5Z	200	Bobbin	1.91	1.76
50-17	0	200	Tubes	1.91	1.76
50-17	0.5Z	680	Bobbin	2.01	1.76
70-17	0.5Z	200	Bobbin	1.71	1.66
70-34	0	100	Tubes	1.71	1.66
70-34	0.5Z	100/200	Bobbin	1.71	1.66
70-34	0	200	Tubes	1.71	1.66
70-34	0.5Z	300	Bobbin	1.76	1.66
70-34	0.5Z	680	Bobbin	1.76	1.66
80-26	0.5Z	200	Bobbin	1.71	1.56
90-44	0.5Z	200	Bobbin	1.86	1.76
100-34	0.5Z	200	Bobbin	1.65	1.60
100-34	0.5Z	300	Bobbin	1.70	1.60
100-34	0	300	Tubes	1.70	1.60
100-34	0.5Z	680	Bobbin	1.70	1.60
100-50	0.5Z	200	Bobbin	1.71	1.60
140-68	0	200	Tubes	1.60	1.55
140-68	0.5Z	200	Bobbin	1.60	1.55
140-68	0.5Z	300	Bobbin	1.65	1.55
200-34	0	100	Tubes	1.49	1.44
200-34	0.7Z	100	Bobbin	1.49	1.44
200-34	0.7Z	680	Bobbin	1.54	1.44
200-68	0.7Z	200	Bobbin	1.56	1.46
210-34	0	300	Tubes	1.49	1.44
210-34	0.7Z	300	Bobbin	1.49	1.44
210-34	0.7Z	300	Beam	1.54	....
210-34	0.7Z	330	Bobbin	1.59	1.44
260-17	1Z	300	Bobbin	1.49	1.39
400-68	0.7Z	100	Bobbin	1.39	1.29
420-68	1Z	300	Bobbin	1.39	1.29
780-51	1Z	300	Bobbin	1.39	1.29
800-140	0.5Z	100	Bobbin	1.39	1.29
840-140	0.5Z	300/700	Al. Tbs	1.30	1.20
840-140	0.5Z	300/700	Beam	1.30	....

Color-Sealed Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
30-10	0.5Z	140	Bobbin	$2.71	$2.56
40-13	0.5Z	140	Bobbin	2.36	2.16
70-34	0.5Z	140	Bobbin	2.06	2.01
100-34	0.5Z	140	Bobbin	2.00	1.95
100-34	0	140	Tubes	2.00	1.95
200-34	0.7Z	140	Bobbin	1.84	1.79
260-17	1Z	140	Bobbin	1.84	1.79

Industrial Yarn				Price/Lb.
2520-420	0	300/700	Paper Tube	$1.27
4200-700	0	300/700	Paper Tube	1.25
5040-840	0	300/700	Paper Tube	1.25
7560-1260	0	300/700	Paper Tube	1.24
10080-1680	0	300/700	Paper Tube	1.24
15120-2520	0	300/700	Paper Tube	1.23

These prices are subject to change without notice. Terms: Net 30 Days.

Types

Type 100—Bright, normal tenacity.
Type 140—Bright, color-sealed, black, normal tenacity.
Type 200—Semidull, normal tenacity.
Type 209—Semidull, normal tenacity.
Type 300—Bright, high tenacity.
Type 330—Bright, high tenacity, more heat & light resistant.
Type 400—Semidull, high tenacity.
Type 680—Dull, normal tenacity.
Type 700—Bright, high tenacity.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Following are invoiced as a separate item.
Bobbins—25 cents or 45 cents depending on type
Aluminum Tube—40¢ each
Draw Winder Tubes—$.70 or $1.00 depending on type
Tire Cord Beams—$220.00 each
Cradles for Tire Cord Beams—$115.00 each
Tricot Beams—$95.00 each
Cradles for Tricot Beams—$130.00 each
(Beams and Cradles are deposit carriers and remain the property of E. I. du Pont de Nemours & Co., Inc.)

POLYESTER E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron"*

Denier & Filament	Turns/Inch	Luster	Type*	Tubes 1st Gr.
30-14	0	Bright	55	$2.81
40-27	0	Semidull	56	2.41
40-27	0	Bright	55	2.41
40-27	0	Dull	57	2.46
70-34	0	Semidull	56	2.01
70-14	0	Bright	55	2.01
70-34	0	Bright	55	2.01
70-34	0	Dull	57	2.06
100-34	0	Semidull	56	1.94
140-28	0	Bright	55	1.89
150-34	0	Semidull	56	1.91
220-50	0	Bright	51	1.84
250-50	0	Bright	55	1.86
1100-250	0	Semidull	59	1.50
1100-250	0	Bright	51	1.50

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Yarn Types

* Type:
Type 51—Bright, high tenacity.
Type 55—Bright, normal tenacity.
Type 56—Semidull, normal tenacity.
Type 57—Dull, normal tenacity.
Type 59—Semidull, high tenacity.

Tubes are invoiced as a separate item at $.70 each.
All tubes are returnable for credit.
* "DACRON" is DuPont's registered trade-mark for its polyester fiber.

SARAN FIBERS

The Saran Yarns Company — Odenton, Maryland

The Hall Company (Selling Agent)
41 East 42 Street, New York 17, N. Y. (Oxford 7-8996)

Current Prices:

CONTINUOUS FILAMENT

Type	Twist p. i.	Natural	Colors
1240/10	3	$1.32	$1.37
750/20**	3	1.75	1.80

** For filter fabrics and other industrial purposes only.
F.O.B. Odenton, Maryland.
Terms: Net 30 days.

NON CELLULOSIC STAPLE & TOW

ACRYLIC

The Chemstrand Corp.

Current Prices

"Acrilan"

Effective October 1, 1957

	Regular Acrilan	Acrilan 16
2.0 denier Semi-Dul and Bright staple & tow	$1.24	$1.24
2.5 denier Hi-Bulk Bright and Semi-dull staple and tow	1.16	1.16
3.0 denier Bright & Semi-dull staple & tow	1.16	1.16
5.0 denier Bright & Semi-dull staple & tow	1.16	1.16
8.0 denier Bright & Semi-dull staple	1.16	1.16
15.0 denier Bright & Semi-dull staple	1.01	1.05

Terms: Net 30 days. Freight prepaid to points east of the Mississippi River.

Union Carbide Chemicals Co.

Div. Union Carbide Corp.
Textile Fibers Dept.
Effective October 1, 1957

Dynel Staple & Tow

Natural Dynel	
3, 6, and 12 Denier, Staple and Tow	$1.10 per lb.
24 Denier, Staple and Tow	1.05 per lb.
Dynel Spun with Light Colors:	
Whitened, Blond, or Gray	
3, 6, and 24 Denier, Staple and Tow	1.30 per lb.
Dynel Spun with Dark Colors:	
Black, Charcoal, and Brown	
3, 6, and 24 Denier, Staple and Tow	1.40 per lb.
Dynel Type 63 Bulking Fiber (3 Denier only)	Add $.05 per lb. to above prices

Prices are quoted f.o.b. South Charleston, W. Va.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Orlon"** Acrylic Staple & Tow

Type 42	1st Grade
1.0 Denier Semidull & Bright—Staple only	$1.48
2.0 Denier Semidull & Bright	1.33
3.0 Denier Semidull & Bright	1.28
3.0 Denier Semidull Color-sealed Black	1.63
6.0 Denier Semidull & Bright	1.20
6.0 Denier Color-sealed Black	1.55
4.5 Denier Semidull	1.20
10.0 Denier Semidull	1.20

Tow—Total Denier 470,000
Staple Lengths—1½", 2", 2½", 3", 4½"
High Shrinkage Staple same price as Regular Staple

Type 39 $1.06
This product is designed for *woolen system spinning* and is a blend of deniers (average 4.2) with a variable cut length.

Type 39A $1.14
This product is designed for *woolen system spinning* and is a blend of predominately fine deniers (average 2.4) with a variable cut length.

Nylon Webbing Data

Two reports describing high-strength nylon webbings for use in multi-purpose cargo nets, and as improved static lines for parachutes, are now available to industry from the Office of Technical Services, U. S. Department of Commerce, Washington, D. C. The reports are:

"Low Cost Nylon Webbing Cargo Nets," Research and Development Division, Bureau of Supplies and Accounts, U. S. Navy; 57 pages, $1.50 per copy; Order PB 121810.

"Development of Static Line Webbing for the T-10 Parachute System," Wright Air Development Center; 38 pages, $1 per copy; Order PB 121848.

High Polymer Textbook

The first textbook said to provide complete coverage of the field of high polymers has been written by Dr. Fred C. Billmeyer, Jr., a research chemist for the Du Pont Co. Published by Interscience Publishers, the book contains 526 pages, including 185 illustrations and 49 tables. It was written specifically for first-year graduate courses. Dr. Billmeyer, a graduate of California Institute of Technology, received a doctor of philosophy degree from Cornell University in 1945.

Werner Von Bergen has been appointed associate director of research for J. P. Stevens & Co., Inc.

John S. Moxon has been elected to the board of directors of Textile Machine Works.

R. S. Jones

Rupert S. Jones has been named vice president in charge of operations at Courtaulds' LeMoyne plant in Alabama, succeeding **Richard S. Thomas.** Mr. Thomas has resigned from his post to return to England as manager of the Wolverhampton plant of Courtaulds, Ltd.

William A. Levin has been elected president of Gold Mills, Inc., succeeding the late **Harry Gold.** In the same company, **David Gold** has resigned from the vice presidency.

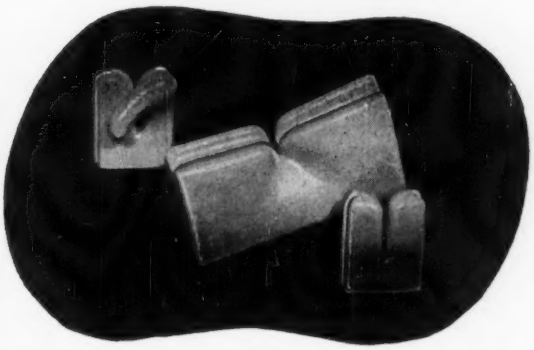
Paul A. Wilson has been appointed to the position of division sales manager of Draper Corp.'s Greensboro division., succeeding the late **Clare H. Draper.**

Miss Eunice Armstrong has been appointed head of Fiber Publicity Department of Eastman Chemical Products, Inc. In the Company's Home Furnishings Department, **Miss Margaret Fitzgerald** has been appointed market reporter and merchandising assistant.

Orville W. B'Hymer has been promoted to the newly-created position of customer service manager for the Fatty Acid Sales Department of Emery Industries, Inc. **John A. Condon, Jr.** has been appointed textile chemical sales representative for Emery in the New England area, and **Robert C. De Lollis,** sales representative for the Mid Atlantic sales territory.

Stanley H. Rose has been appointed to the newly-created post of apparel merchandising manager at American Viscose Corp. to supervise merchandising activities of the company's Avisco textile fibers in apparel end uses. **George J. Stritch** has become Detroit representative for the Viscose tire yarn division.

The future is our concern
the present does not satisfy us.



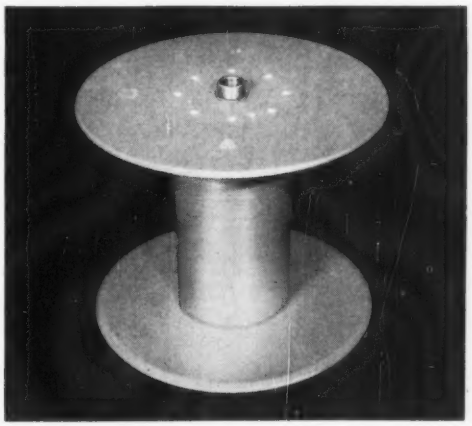
We who are responsible for the high quality of

LAMBERTVILLE THREAD GUIDES

are always looking to the future too—looking for new ways to make our guides even harder, smoother and longer wearing. Our research in ceramics goes on constantly and is one of the reasons why our guides give the greatest economy and best service possible. Available in white or "Durablu" finish.

LAMBERTVILLE CERAMIC
AND MANUFACTURING COMPANY
LAMBERTVILLE NEW JERSEY

NO YARN TRAPPING WITH
BRAZED ALUMINUM TWO POUND TAKE-UP BOBBIN



New aluminum take-up bobbin with barrel and heads brazed together into a single unit prevents yarn trapping. Exceptional strength at price no higher than ordinary bobbins.

Write us today for full details.

B W MACK ALLENTOWN BOBBIN WORKS, INC.
ALLENTOWN PENNSYLVANIA

Type 39B $1.01

This product is designed for *woolen system spinning* and is a blend of predominately heavy deniers (average 6.5) with a variable cut length.

F.O.B. Shipping Point—Freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Terms: Net 30 Days.

** "ORLON" is DuPont's registered trade-mark for its acrylic fiber.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective November 15, 1956

"Verel"*

Deniers	Dull and Bright
2, 3, 5 and 8	$1.10 per pound

Prices are subject to change without notice.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of the Mississippi River. Seller reserves the right to select route and method of shipment. If buyer requests and seller agrees to a route or method involving higher than lowest rate buyer shall pay the excess of transportation cost and tax.

* "Verel" is a trade-mark of the Eastman Kodak Co.

NYLON

American Enka Corp.

Nylenka (Nylon Six Staple)

Denier	Luster	Length (Inches)	Price per pound
3	semi-dull	1⅛, 1½, 2, 2⅝, 3, 4½	$1.28
6	bright	3, 4½	1.28
8	bright	2⅝	1.20
10	bright	3	1.20
15	bright	3	1.20
15	semi-dull	3	1.20

Deniers and lengths of staple not listed above are available upon special request.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Staple and Tow

Denier	Type	Staple Lengths	Tow Bundle	1st. Grade Price/Lb.	2nd Grade Staple Only
1.5	200	1⅛"—4½"	None made	$1.33	$1.18
1.5	201	1⅛"—4½"	None made	1.35	1.20
3.0	100/200	1⅛"—4½"	430M	1.28	1.13
3.0	101/201	1⅛"—4½"	455M	1.30	1.15
6.0	100	1⅛"—4½"	330M	1.28	1.13
6.0	101	1⅛"—4½"	345M	1.30	1.15
15.0	100	1½"—6½"	330M	1.20	1.05
15.0	101	1½"—6½"	None made	1.22	1.07
15.0	600	1½"—6½"	330M	1.22	1.07
15.0	601	1½"—6½"	345M	1.24	1.09

Staple lengths are restricted to the range shown opposite each denier above. The actual cut lengths within these ranges are as follows:

1⅛, 1½, 2, 2½, 3, 4½ and 6½

Types

Type 100 Bright, normal tenacity, not heatset.
Type 101 Bright, normal tenacity, heatset.
Type 200 Semidull, normal tenacity, not heatset.
Type 201 Semidull, normal tenacity, heatset
Type 600 Dull normal tenacity, not heatset.
Type 601 Dull normal tenacity, heatset.
These prices are subject to changes without notice.
Terms—Net 30 Days.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Industrial Rayon Corp.

Effective November 29, 1956

Nylon Staple

1.5 denier	$1.33 per lb.
2, 3 and 6 denier	1.28 per lb.
8 and 15 denier	1.20 per lb.

Bright and semi-dull, required length.

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points east of the Mississippi River.

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron"* Staple and Tow

Denier	Luster	Type	Length	Tow Bundle	1st Gr.
1.25	Semidull	54	1¼"-3"	....	$1.56
1.5	Semidull	54	1¼"-3"	....	1.51
3.0	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41
4.5	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41
6.0	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41

Terms: Net 30 Days.

F. O. B. Shipping Point—Freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

POLYVINYL ACETATE

American Viscose Corp.

Effective October 1, 1956

"Vinyon"® Staple

3.0 denier ½" unopened	$.80 per lb.
3.0 " 1¼" unopened	.80 per lb.
3.0 " 1¼" opened	.90 per lb.
3.0 " 2" opened	.90 per lb.
3.0 " 2" unopened	.80 per lb.
5.5 " 1" opened	.90 per lb.
5.5 " 3½" opened	.90 per lb.
5.5 " 3½" unopened	.80 per lb.

Terms: Net 30 days.

PROTEIN

Virginia-Carolina Chemical Corp.

Fiber Division

Effective January 15, 1951

"Vicara" Staple

	Standard Crimp	Highly Crimped
3 Denier	$1.00 per lb.	$1.05 per lb.
5 Denier	1.00 per lb.	1.05 per lb.
7 Denier	1.00 per lb.	1.05 per lb.

Bleached "Vicara" Staple

	Standard Crimp	Highly Crimped
3 Denier	$1.10 per lb.	$1.15 per lb.
5 Denier	1.10 per lb.	1.15 per lb.
7 Denier	1.10 per lb.	1.15 per lb.

Staple length ½ to 6 in.

Supplied in staple lengths or as continuous tow (270,000 filaments).

Terms: Net 30 days.

Prices f.o.b. Taftville, Conn. on 10% moisture regain basis.

SARAN FIBERS

The Saran Yarns Company — Odenton, Maryland

The Hall Company (Selling Agent)

41 East 42 Street, New York 17, N. Y. (Oxford 7-8996)

Current Prices:

Saran Staple

Type	Denier	Natural	Colors
2N	22	$0.70	$0.75
2N	16	.74	.79
3Q*	22	.63	.67

In any staple length 1½ to 6". Also 45 denier, 7" cut.

* For carpets and industrial fabrics.

METALLICS

Fairtex Corporation

1808 Liberty Life Building

Charlotte 2, N. C.

December 18, 1957

1. Fairtex No. 260 (butyrate)—gold, silver and copper.

Width	Yield (Per Pound)	Price (Per Pound)
1/120"	21,000	$4.75
1/80"	13,000	4.00
1/64"	10,800	3.35
1/50"	8,400	3.35
1/32"	5,300	3.00
1/16"	2,600	2.85
1/8"	1,300	2.70

2. Fairtex with Mylar® No. 100V (2 ply), (metallized type)—silver only.

1/100"	48,000	$13.25
1/80"	37,000	11.40
1/64"	31,000	11.00
1/50"	24,200	10.75
1/32"	15,500	10.40

Fairtex with Mylar® No. 150V (3 ply), (metallized type)—gold, silver and copper.

1/100"	32,000	$10.65
1/80"	25,000	9.25
1/64"	21,000	8.85
1/50"	16,400	8.60
1/32"	10,500	8.25

3. Fairtex with Mylar® No. 150F, (foil type)—gold, silver and copper.

1/100"	28,000	$7.75
1/80"	21,450	7.00
1/64"	17,200	5.95
1/50"	13,400	5.80
1/32"	8,600	5.65
1/16"	4,300	5.50

4. General Information:
   a. Staple available upon request on above types.
   b. Above types also available supported with Nylon, Fortisan or other synthetics.
   c. Colors available on above upon request. $.10 per pound additional.
   d. Quantity discounts on above prices.
   e. Fairtex is supplied on 1 lb. disposable spools—48 spools per

James P. Smith has joined the service staff of the Whitin Machine Works, with offices in Spartanburg, S. C.

Maurice D. Holmes has joined the Chemstrand Corp. as a senior representative in the Technical Sales Service Department.

Frank J. Acker has retired from the National Aniline Division, Allied Chemical & Dye Corp., after 38 years of association with the company. In the same division, **Frank W. Gainey,** dyestuffs technician and salesman in the New England area has retired after 31 years of service for the company.

C. W. Bendigo

C. W. Bendigo has been appointed to the executive staff of Werner Textile Consultants, as coordinator of all textile market research assignments.

J. Thomas Lindley has been named southern divisional sales manager for Fabulized, Inc.

John F. Heintz has been appointed controller of the Rensselaer dyestuff and chemical plant of General Aniline & Film Corp., succeeding **Carroll W. Daniels.** At the sales office of General Dyestuff Co., Chattanooga, Tenn., a sales division of General Aniline & Film Corp., **Lewis R. Waddey** has been named branch manager, succeeding **H. Alison Webb.**

Fred Gillam

Fred Gillam has been elected vice president of Kingston Mills, Inc., in charge of manufacturing.

Charles B. Anderson has been elected president of Roxbury Carpet Co., succeeding **A. J. deGozzaldi** who has retired as president and has been elected chairman of the board.

J. E. McCulloch

David Taylor

James E. McCulloch has been appointed director of personnel administration of Celanese Corp. of America. In the company's Textile Division, **David Taylor** has been appointed manager of manufacturing.

Watson P. Schofield, has retired from his position as raw stock purchasing and yarn manufacturing supervisor of the Fox River Valley Knitting Co. He will remain in an advisory capacity with the firm.

Deaths

Sylvester V. Cottrell, associated for 40 years with National Aniline Division, Allied Chemical & Dye Corp. in dyestuffs and chemical sales died suddenly in November.

John L. Graves, sales manager of Saco-Lowell Shops, died recently after a short illness.

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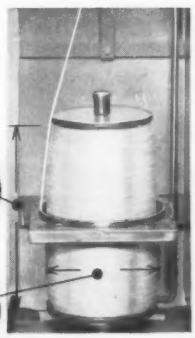

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Price List
Metlon F. Mylar (Foil Laminated) Filament

Width	Yards Per Lb.	Price Per Lb. Gold & Silver
1/120"	32,500	$9.80
1/80"	20,500	8.10
1/64"	17,000	5.95
1/50"	12,750	5.80
1/32"	8,500	5.65
1/16"	4,250	5.65
1/8"	2,125	5.65

Colors Also Available.
Supplied in staple lengths 1" to 4".
Prices on unlisted items can be obtained upon request.
Quantity discounts available.
TERMS: 1% 10 days, net 30. F.O.B. Providence, Rhode Island. Minimum freight allowed on shipments of 100 lbs. or over.
PUT UP: Plastic Disposable Spools.
Minimum order—one case (approximately 35 lbs. net). Smaller quantities subject to surcharge.
PRICES APPLY TO CONTINENTAL U. S. A. AND CANADA.

Reynolds Metals Co.

Reynolds Aluminum Yarns

July 5, 1957
200 Series

	PRODUCT NUMBER	WIDTH	APPROX. YIELDS IN LINEAL YDS. PER LB.	¢ PRICE PER POUND—48 THRU 1,999 POUNDS (1) Standard Colors	(2) Special Colors	(3) Non-Standard Colors	(4) Multi-Colors
Acetate-Butyrate	204	1/8"	1,350	$2.80	$2.90	$3.05	$2.95
	204	1/16"	2,700	2.85	2.95	3.10	3.00
	204	1/32"	5,400	3.05	3.15	3.30	3.20
	204	1/50"	8,450	3.35	3.45	3.60	3.50
	204	1/64"	10,800	3.50	3.60	3.75	3.65
	204	1/80"	13,500	4.00	4.10	4.25	4.15
Mylar-Foil	230	1/8"	1,450	$5.60	$5.70	$5.85	$5.75
	230	1/16"	2,900	5.75	5.85	6.00	5.90
	230	1/32"	5,800	5.90	6.00	6.15	6.05
	230	1/50"	9,050	6.05	6.15	6.30	6.20
	230	1/64"	11,600	6.20	6.30	6.45	6.35
	230	1/80"	14,450	7.25	7.35	7.50	7.40
Mylar-Foil	235	1/8"	2,150	$5.35	$5.45	$5.60	$5.50
	235	1/16"	4,300	5.50	5.60	5.75	5.65
	235	1/32"	8,600	5.65	5.75	5.90	5.80
	235	1/50"	13,400	5.80	5.90	6.05	5.95
	235	1/64"	17,200	5.95	6.05	6.20	6.10
	235	1/80"	21,450	7.00	7.10	7.25	7.15
Mylar-Foil	215	1/8"	1,730	$5.30	$5.40	$5.55	$5.45
	215	1/16"	3,460	5.45	5.55	5.70	5.60
	215	1/32"	6,920	5.60	5.70	5.85	5.75
	215	1/50"	10,800	5.75	5.85	6.00	5.90
	215	1/64"	13,840	5.90	6.00	6.15	6.05
	215	1/80"	17,270	6.95	7.05	7.20	7.10

Reymet Staple: Foil Mylar $6.00 per lb.

Metallized Mylar: $12.00 per lb. These can be cut in width to 1/220", also full range of Colors.

(1) Standard Yarn Colors: Silver, Gold, and Copper.
¢ (2) Special Yarn Colors: Refer to Products Supervisor, Special Foil Products located at Richmond, Va.
(3) Non-Standard Yarn Colors: Refer to Products Supervisor, Special Foil Products located at Richmond, Virginia.
(4) Multi-Colors: Limited to one standard color stripe on silver.
¢ Quantity Discounts to be applied on invoice:
5,000 lbs. and over less 5%.
2,000 thru 4,999 lbs. less 3%.

Items can be grouped for quantity price provided each is held to a minimum of 250 pounds. No grouping for less than 250 pounds.

Minimum acceptable orders for standard and special colors is 48 pounds per size and color.

Minimum acceptable order for non-standard colors is 150 pounds per size and color.

AVAILABLE PACKAGES:

Following types available:

Die-cast aluminum spools with straight flange; 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.40 each are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th & Byrd Streets, Richmond, Virginia.

No charge returnable plastic spools with 3¼" O.D., 4⅛" traverse. Each spool contains approximately 1 pound of yarn. These spools are returnable for credit @ $.02 each F.O.B. customer's plant. Subject to inspection and count of seller.

Tin spools with straight flange with 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.10 each are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th & Byrd Streets, Richmond, Virginia.

PACKING:

36 spools per corrugated fiber carton, size 18-1/16" x 14-1/16" x 11".

ORDERING DATA:
Specify Product, Width, Color and Type of Spool.

Du Pont Nylon Expansion

Du Pont will discontinue production of type 168 Super Cordura high tenacity rayon at its Richmond, Va., plant in preparation for starting up its new nylon plant, scheduled to begin production early in 1958. Employes producing type 168 rayon, made only at the Richmond plant, will be trained for jobs in the new nylon operation or transferred to production of type 272 Super Cordura, a high strength rayon used for tire cord and other industrial products. Type 272 will continue to be made at the Richmond facility. The nylon plant is designed to produce 40,000,000 pounds annually of nylon fiber for tire cord and other industrial products.

Creslan Staff Expanded

American Cyanamid Co. has established a technical service department to serve customers and other processors of its Creslan acrylic fiber. Appointed to the department were: Bernard W. Crowe, fabric development; William J. Clark, dyeing and finishing; Philip B. Burgess, spinning; Nils R. Sorensen, knitting, and David Shieldkret, wear testing. Robert J. G. Schofield is department manager, reporting to W. L. Lyall, Jr., general sales manager.

Named to the staff of American Cyanamid's new Santa Rosa plant near Pensacola, Fla., are: Jason M. Salsbury, technical department manager; Robert B. Latimer, production department manager; Richard W. Leins, chief engineer; A. C. Healey, chief project engineer; F. A. Edmonson, maintenance superintendent, and James J. Pinke, utilities superintendent. Department managers previously named are: N. H. Marsh, plant manager; W. N. Sellers, service, and Wayne T. Kent, personnel relations.

Silk Men Fear Japanese Imports

Three important resolutions were adopted by the sixth International Silk Association Congress held recently at the Waldorf-Astoria Hotel, New York City. Hughes Morel-Journel, of France, newly-elected ISA president, reported that the Directing Board had established a special subcommittee to examine claims that Oriental exports of manufactured and semi-manufactured silk fabrics are becoming increasingly harmful to the silk industries in the United States and a number of European nations. Members cited a 25% decline in imports of raw silk into the U. S. in the last six months and a 75% rise in silk fabric imports.

Delegates representing the six nations of the European Common Market reported a resolution calling for changes in existing silk tariff regulations. The delegates proposed that raw and waste silk enter all six countries duty-free, while spun and thrown silk imports carry duties as outlined in the Rome Treaty.

A third resolution approved stricter classification standards for Dupioni silk, to become effective as soon as practicable. In another resolution the Japan Silk and Synthetic Textile Exporters' Association was requested to place more rigid inspection standards on silk piece goods in all categories, including a minimum standard of construction for 10-momme habutae. Minimum standards on habutae up to 8 momme have been established for some time.

Delegates also showed concern about the growth of synthetic fibers in light garments. The consensus was that the problem was one of re-education, chiefly of younger consumers, who have been exposed to synthetics and did not know silk.

Japanese raw silk production, it was reported, has increased from 100,000 bales in 1946 to almost 320,000 bales in 1957. It was estimated Japanese raw silk output would run to 380,000 bales by 1962.

The next International Silk Congress is scheduled for May, 1959, in Germany.

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Calendar of Coming Events

Jan. 8—AATT monthly meeting. Hotel Vanderbilt, New York, N. Y.
Jan. 13-14—National Cotton Council of America annual meeting. Phoenix, Arizona.
Jan. 20—The Drysalters Club of New England annual dinner. Hotel Vendome, Boston, Mass.
Jan. 24—AATCC Hudson-Mohawk Section. Albany, N. Y.
Jan. 27-30—Plant Maintenance and Engineering Show. International Amphitheater, Chicago, Ill.
Jan. 30-Feb. 1—American Society for Quality Control, Textile Div., Eighth Annual Conference. Clemson House, Clemson, S. C.
Feb. 4-6—The Society of the Plastics Industry, Inc. Reinforced Plastics Division Conference. Edgewater Beach Hotel, Chicago, Ill.
Feb. 5—AATT monthly meeting. Hotel Vanderbilt, New York, N. Y.
Feb. 12-14—1958 Cotton Research Clinic. Pinehurst, N. C.
Mar. 5—AATT monthly meeting. Hotel Vanderbilt, New York, N. Y.
Mar. 6-7—Textile Quality Control Association spring meeting. Poinsett Hotel, Greenville, S. C.
Mar. 13-14—Annual AIEE Textile Electrical Conference. Georgia Institute of Technology, Atlanta, Ga.
Mar. 13-14—Southern Textile Methods and Standards Association. Clemson House, Clemson, S. C.
Mar. 18-21—A.S.T.M. Committee D-13 spring meeting. Sheraton Park Hotel, Washington, D. C.
Mar. 20-21—ASME Textile Engineering Conference. North Carolina State College, Raleigh, N. C.
Apr. 2—AATT monthly meeting. Della Robbia Room, Vanderbilt Hotel, New York, N. Y.
Apr. 10-12—American Cotton Manufacturers Institute annual meeting. Hollywood Beach Hotel, Hollywood, Fla.
Apr. 16-18—Alabama Textile Manufacturers Assoc. annual meeting. Hotel Buena Vista, Biloxi, Miss.
Apr. 21-22—NAHM annual meeting and Hosiery Industry Conference. Hotel Roanoke, Roanoke, Va.
Apr. 23—The Textile Institute annual meeting. Nottingham, England.
Apr. 23-26—Cotton Manufacturers Assoc. of Georgia. Boca-Raton Hotel, Boca Raton, Fla.
Apr. 24-26—Phi Psi Textile Fraternity annual convention. Philadelphia, Pa.
Apr. 30-May 1—The Fiber Society spring meeting. Clemson House, Clemson, S. C.
May 1—Underwear Institute annual meeting. Hotel Biltmore, New York, N. Y.
May 2—The Drysalters Club of New England spring dinner. Hotel Vendome, Boston, Mass.
May 3—The Alabama Textile Operating Executives spring meeting. Thach Auditorium, Auburn, Ala.
May 6—Canadian Textile Conference. Queen Elizabeth Hotel, Montreal, Que.
May 7—AATT monthly meeting. Della Robbia Room, Vanderbilt Hotel, New York, N. Y.
May 19-24—National Cotton Week.
Jun. 4—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Jun. 4-7—Tufted Textile Manufacturers Association annual meeting. Lookout Mountain, Tenn.
Jun. 9-12—Materials Handling Exposition. Public Auditorium, Cleveland, Ohio.
Jun. 19-21—Southern Textile Association annual convention. Grove Park Inn, Asheville, N. C.
Jun. 22-27—ASTM annual meeting. Hotel Statler, Boston, Mass.

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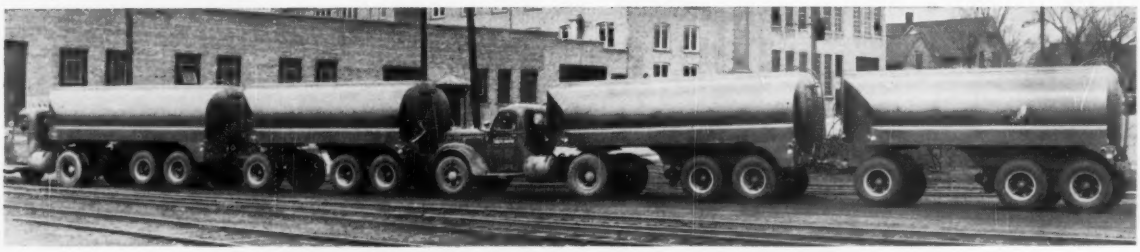

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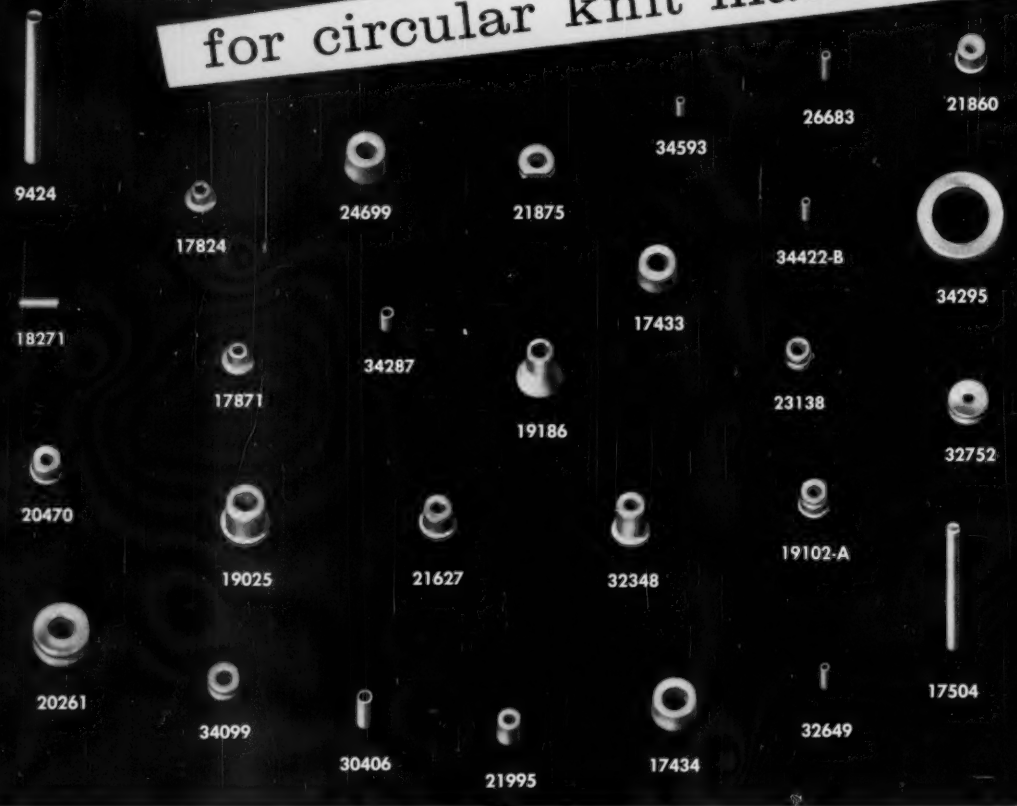

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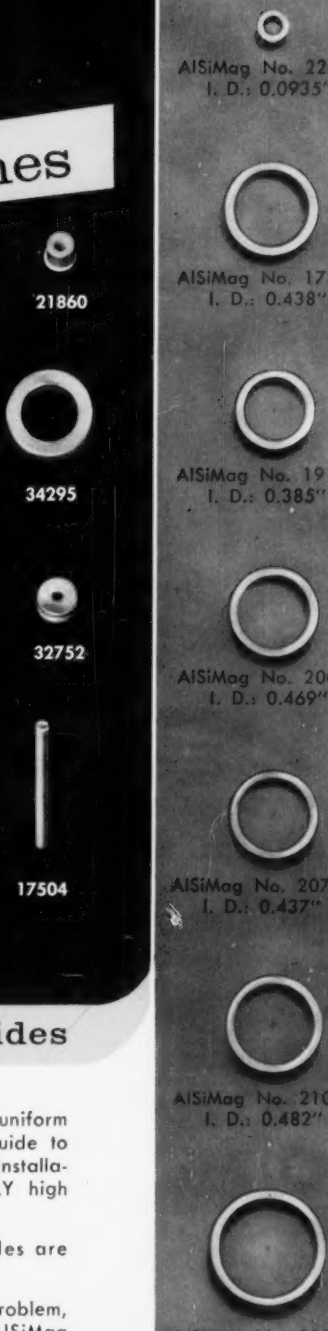

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